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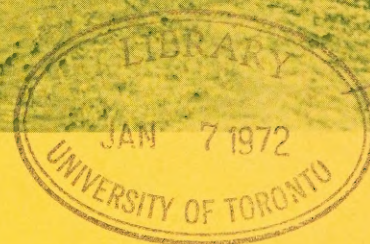
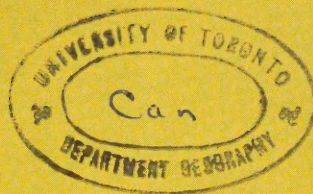




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# TWEED LAND USE PLAN

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ONTARIO

DEPARTMENT OF LANDS AND FORESTS

HON. A. KELSO ROBERTS, Q.C., Minister

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Ontario. Lands and forest dept.

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LAND USE PLAN

FOR THE

TWEED FOREST DISTRICT



by

J. W. Keenan R.P.F.

With Section on Land and Water Resources  
of the Tweed District

by

G. A. Hills  
Research Branch

March 31st., 1964



## FOREWORD

This is the first of the twenty-two district Land Use Plans to receive official approval. It is also the first plan to be made using the new site classification evolved by the Research Branch as the scientific basis for this multiple use plan.

A decision was reached some two years ago to use the Tweed district plan as a prototype to show the suitability and practicability of using the new site classification as a scientific foundation for land use planning.

In this way a path has been charted, not to be slavishly followed, but to demonstrate a method that others will study in relation to their own problems, and so evolve a better plan of their own.

Furthermore, it is not considered that this plan is complete. A start has been made, a foundation has been established upon which the plan will continue to develop as new information is brought forth and as new challenges are presented.

It is hoped in this way, that an increasing excellence in planning for management will result throughout the department.

Maple,  
February, 1965.

E. L. Ward,  
Supervisor,  
Land Use Planning Section.



Ontario  
Department of Lands and Forests

THE LAND USE PLAN  
for the  
TWEED ADMINISTRATIVE DISTRICT

This plan is recommended as a guide for resources management by the Department in the Tweed Administrative District and is subject to revision as new scientific information becomes available and as social and economic changes take place.

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Date .January.1st, . . . . 1965

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## Introduction

The multiple activities of the Department of Lands and Forests in the field of renewable natural resource management must be prosecuted so as to achieve the maximum economic and social benefits from these resources. In order that this may be accomplished, the managers of each of the individual resources must integrate their management efforts with those responsible for the other resources. This concept has long been recognized by the Ontario Government as witnessed by the combination, over the years, under one department, of the branches of government responsible for forest protection, lands, timber management, administration, fish and wildlife management, parks administration, and forestry, wildlife and fisheries research.

Because of the dynamic changes affecting the demand for and use of the renewable natural resources, it has become readily apparent that long range planning is essential to ensure their effective management for sustained use. The land use plan, which encompasses all of the renewable natural resources, and the concomitant management plans for the specific resources, are the media through which this goal can be achieved. Out of this realization has come the direction that land use plans be prepared for each district in the province. Accordingly, this plan has been prepared within the framework of the instructions issued by Mr. E. L. Ward of the Land Use Planning Section titled "A Land Use Plan for the Districts" (Revised March 15, 1962).

Inasmuch as the land capability classification system used in this plan has regional and province-wide application, the ratings for this district may be assessed at a higher administrative level and be related directly to other districts.

The land use recommendations, lacking precedence in Ontario, were determined at the district level for the Tweed District and would not necessarily be satisfactory for application to other districts. The criteria used in these ratings have, however, been carefully enunciated, so that they may be assessed and compared to some degree with ratings for other areas.

Of necessity, agriculture must be included in any land use plan. This resource is not under the jurisdiction of the Department of Lands and Forests, but lacking any reasonable alternative, assessments have been made in this plan of the agricultural potential of the land, and recommendations for agricultural use of land. These recommendations recognize the economic and social importance of agriculture,

and assign to agriculture all lands considered capable of supporting viable agricultural enterprises. In addition, where agriculture use appears to be marginal, but does continue to support, at least in part, a rural community, continuance of this use is recommended. At the present time, management effort with respect to the other resource uses can logically be directed to other productive areas until such time as the need for this marginal agriculture is resolved. If, as anticipated, much of this land is abandoned to farming, it can then be directed toward its best use.



SECTION 1

HISTORY OF THE

TWEED FOREST DISTRICT



UNIVERSITY OF TORONTO

A HISTORY OF THE TWEED FOREST DISTRICT

WITH SPECIAL REFERENCE TO LAND USE

RESOURCE MANAGEMENT DIPLOMA COURSE

LAND USE ECONOMICS

FEBRUARY 26th, 1963

JAMES W. KEENAN

## CHAPTER I

### INDIAN AND FRENCH SETTLEMENT IN THE TWEED DISTRICT

Samuel de Champlain was the first white man to visit what is now the Tweed Forest District when he travelled up the Ottawa River to Allumette Island in the year 1613. In portaging overland from the foot of the Chenaux Rapids through the chain of lakes to Allumette Lake, a widening of the river south of Pembroke, he traversed part of the present township of Horton. The Algonquin Indians occupied the area at that time, and Champlain noted (4) that while they depended primarily on fishing and hunting for their sustenance, they practised farming to some small extent, growing Indian corn, squash, peas and kidney beans.

Champlain retraced his route two years later in 1615 when he continued on to the country of the Huron Indians in the vicinity of Simcoe County. It was from here that he led a war party of Hurons, by way of the Trent River system and Lake Ontario in an unsuccessful assault on the Iroquois of Upper New York State. Returning across Lake Ontario, the raiding party rested for some time in the Bay of Quinte area before continuing on to the Huron country. It was during this stop-over that Champlain participated in a typical Indian deer hunt which he described in some detail. According to his record, the Indians chose a stand of pine where, using pine poles, they constructed an enclosure consisting of two wings, approximating two sides of a triangle, each eight to ten feet high and 1,500 paces long, which converged to form a narrow opening which gave entry to a corral-like enclosure. The Indians then formed a long line about a mile from the structure and drove the deer before them, striking sticks together to add a sound effect. On reaching the end of the triangle they began to shout like wolves and, as the narrative recounts, "The deer, hearing this frightful noise, are constrained to enter the retreat by the little opening, whither they are hotly pursued by arrow shots" (4). This procedure was repeated every two days for thirty-eight days during which time 120 deer were captured. Champlain also recorded that the Indians fished the nearby waters, "catching trout and pike of prodigious size."

The Indians of this period had generally progressed to the point where agriculture played an important role in their existence. Jones, in his "History of Agriculture on Ontario" (5) notes that "the members of the Huron-Iroquois family, it is clear, had long before the coming of Champlain, made the transition from a nomadic to a 'shifting cultivator' type of culture. The Algonkins, the Nipissings, and the Ottawas were in the midst of the process."



The Iroquois Indians were the first to recognize the agricultural potential of the Bay of Quinte region. While this area appears to have been a no-man's land between the warring Hurons and Iroquois, the latter apparently regularly resorted to this area as a hunting and fishing ground, and in 1668, several Cayuga villages were located there (5). Early maps of the region record the villages of Kente (from which "Quinte" may have been derived), located on the northwest shore of Prince Edward County; Ganeyout, probably located on Hay Bay, but sometimes referred to the vicinity of Napanee; and Tanawate, at the mouth of either the Trent or Moira River. An early Sulpician mission was located at Kente to which cattle, swine and fowls were sent from Montreal.

The Mississauga Indians, a tribe of the Algonquins, occupied much of the north shore of Lake Ontario prior to 1783, and it was from this tribe that the British purchased land for the Loyalist settlements (6). It is recorded (7) that the Mississaugas commonly ascended the rivers flowing into the Bay of Quinte to hunt and fish - the Sagonaska (Moira) River being particularly preferred. Stoco Lake, on which the Village of Tweed is situated, derives its name from Stougcong, a famous chief of the Mississaugas.

The first white settlement in Upper Canada was Fort Frontenac, on the site of the present city of Kingston, and was established in 1673 by the Comte de Frontenac, Governor of New France. In 1675, the King of France granted the French explorer LaSalle a Patent of Nobility under which Fort Frontenac, with four leagues (approximately 69,000 acres) of adjacent country, became the first seignory in Upper Canada. During LaSalle's absence, at the time of his Mississippi River explorations, his seignory was seized by the Governor, thus preventing the further development of this feudal system of agriculture in the Tweed District. An account of the early farming in this settlement has been left by Father Hennepin, a missionary at Fort Frontenac between 1676 and 1679:-

The ground which lies along the Brink of this Lake (Ontario) is very fertile. In the space of two Years and a half that I resided there ...they cultivated more than a hundred Acres of it. Both the Indian and European Corn, Pulse, Pot-Herbs, Gourds, and Water Melons, thrive very well. It is true indeed, that at first the Corn was much spoiled by Grasshoppers; but this is a thing that happens in all Parts of Canada at the first cultivating the Ground, by reason of the extream Humidity of all that Country. The first Planters we sent thither, bred up Poultry there, and transported them with Horned Beasts, which multiply'd extreamly (7).

Thus, mixed farming in the Tweed District had its genesis almost three hundred years ago. Then, as now, insects were a constant threat to the enterprise.

During the period of French occupancy ending with the capture of Fort Frontenac by the British in 1758, there was little or no extension of settlement in the District, except for fur trading posts. The fur trade was, however, important in motivating the exploratory journeys of many French voyageurs through the Great Lakes and up the Ottawa River.

## CHAPTER II

### SETTLEMENT OF THE LAKE ONTARIO "FRONT"

#### The United Empire Loyalists

The arrival of the United Empire Loyalists settlers in the Kingston - Bay of Quinte region in 1784 was a milestone in the history of the Tweed District. These people, victims of the American Revolution, were already well adapted to frontier life and proved themselves resourceful and tenacious in their struggle to build new homes in Upper Canada.

From land acquired by treaty with the Mississauga Indians in 1784, free land grants of 100 acres were made to each settler with an additional 50 acres to each member of his family. Former military personnel were given grants ranging from 100 acres, plus an additional 50 acres per member of the family, for a private, up to 5,000 acres for a field officer (8). The maximum grant was later reduced to 1,200 acres.

It is of interest to note that the early settlers were guided in their choice of areas suitable for agricultural development by the native vegetation of the region. It is recorded (5) that "classifications of the soil on the basis of the kinds of trees that grew on them were made everywhere along the frontier." This was most certainly the first attempt at classifying the use capability of land in the Tweed District.

Concurrent with the Loyalist settlement, a branch of the Mohawk Tribe of the Iroquois, who had fought with the British in the War of Independence, were granted a reserve of 92,000 acres in the area now covered by Tyendinaga Township.

In order to give an areal framework to the early settlement, township surveys were initiated in 1783 with Kingston Township being the first surveyed, followed by nine additional townships running west along Lake Ontario. Reserved from settlement were lands designated as Government, or Crown, Reserves and the Clergy Reserves, which together amounted to approximately one-third of each township and were a contentious issue from the start. In his "History of the



Settlement of Upper Canada" (7), Canniff observes that:-

To have one-third of a concession uncleared and uncultivated was an injury to the two-thirds cleared and cultivated. Large patches of forest, interspersed with cultivated land obstructs the water courses, the air and the light; nurtures wild animals and vermin destructive to crops and domestic creatures around a farmhouse; and especially are injurious to roads running through them, by preventing the wind and sun from drying the moisture.

Government policies respecting the sale of these reserve lands were to play an important role in the downfall of the Family Compact as a result of the Rebellion of 1837.

Another land reservation of particular interest was that of "spots as contain minerals, fossils and conveniences for mills, and other similar advantages of a common and public nature" (7).

In 1792, by proclamation of Lord Simcoe, the Governor of Upper Canada, 19 counties were formed including Hastings, Lennox, Addington, Frontenac and Prince Edward.

The first sawmill and grist mill in Upper Canada was built at what is now Kingston Mills, north of Kingston, in 1782-83 (7). This was followed by mills on Millhaven Creek in 1785 and at Napanee in 1786 (9). These mills, built by the government to supply the needs of the settlers, were the first of many to be located on the main watercourses flowing into Lake Ontario. The timber sawn in these mills, together with potash recovered from the ashes of burned hardwoods, was the only utilization of products from the large scale land clearing operations of the farmer. It was only as a result of the later stimulus of a developing American sawlog and lumber market that the forests in this area became something more than an obstacle in the way of settlement. However, by that time the forest had already been cleared from substantial areas of the townships along the Lake Ontario front.

Wildlife was abundant and was an important source of food to the settlers, particularly during the early years when near starvation conditions prevailed in some areas (7). The shortage of ammunition placed a premium on accuracy, and one report cites the example of a settler killing or wounding a total of four wild geese and five ducks with a single shot (7).

The abundance of wolves in the farming country was of acute concern to the settlers, and in 1793 the first wolf bounty of four dollars a head was imposed. At the same time a two dollar bounty was established on bears, to be later rescinded in 1796 (7).

The Loyalist settlements along the Bay of Quinte, with Kingston as the

centre of commerce, were reputed to be the most advanced agricultural community in Upper Canada (5), and it was remarked in 1794 that "it was so thick settled around the whole bay that their improvements already meet, and form the appearance of an old settled country" (10). However, in the early years, subsistence farming was the rule with a minimum of produce available for cash sales. However, for such surplus as was produced, there was a ready market at the garrison in Kingston. It was government policy, as a measure of assistance to the farmers, to locate the early settlements within reach of the military establishments, to the advantage of both parties. The military paid premium prices, prompting the Honourable Richard Cartwright, a prominent Kingston resident to remark that "as long as the British Government shall think it proper to hire people to come over to eat our flour, we shall go on very well" (5).

The prevailing system of extensive farming, whereby the farmer applied his labour to as large an acreage as possible, was considered to be wasteful in the extreme by European observers. This low intensity use was, nevertheless, justifiable in the circumstances because of the high labour costs and cheap, readily available land.

As settlement progressed, production increased to the point where, by 1794, wheat and flour were being exported to Montreal; and later, in 1797, across Lake Ontario to the American market, as the area acquired a reputation for the quality of its wheat. Although livestock, other than swine, was not an important part of the early agricultural scene, cows, oxen and horses were imported from Montreal as early as 1786, and sheep were being raised by 1795 (7).

Lake Ontario was the earliest transport route used by the settlers, supplemented by paths along the shore suitable for travel by horse. However, as settlement moved inland, roads became a necessity and in 1793, the first highways act "An Act to Regulate the Laying Out, Amending, and Keeping in Repair, the Public Highways and Roads" was enacted, stipulating the road standards and requiring that each settler be responsible for the construction and maintenance of roads across his lot. The first major road was constructed from Kingston to York, and followed the approximate route of the present Highway 33 by way of Bath, the Glenora Ferry, Picton, and Wellington to Carrying Place. This road was completed in 1798. A branch of this road was constructed from Bath into Thurlow and Sidney townships. The first macadamized road in Upper Canada was built between Kingston and Napanee. In 1828, a road was constructed from Belleville to the Marmora Iron Works, one of



the earliest mining operations in the District (7).

The willingness of the Loyalists to sell their "settlers rights" to backwoods land to speculators resulted in the accumulation of large acreages by these opportunists. These entrepreneurs either re-sold the land to new immigrants not entitled to free grants or rented the land under a sharecropping system.

Squatters were an early and continuing problem. New settlers, who were financially unable to acquire their own land, commonly located on vacant land. According to local custom, if the land was subsequently granted or sold, the squatter could sell his improvements to the legal owner. Or, if he earned enough from his enterprise, he was given the first opportunity to purchase the land (5). In many areas of the district, land claims arising from early unauthorized settlement on Crown land are still being processed.

#### The Extension and Consolidation of Settlement

From the nucleus of the original Loyalist settlement, a wave of new immigration, particularly after the end of the Napoleonic Wars in Europe, gradually extended colonization. By 1850, settlement had reached virtually all the arable land lying south of the Canadian Shield, referred to by Lower (II) as the "Laurentian Barrier." Much of this area was inferior to the agricultural land along Lake Ontario and, as a result of population pressure, large areas of marginal land were cleared. Later less favourable economic conditions caused much of this land to revert to low intensity grazing or to be completely abandoned. The Moira, Napanee and Crowe Valley Conservation Authorities are presently purchasing considerable quantities of this marginal land for development as forest, wildlife and recreational areas.

Wheat was the principal agricultural commodity until the early 1850's when increased competition from the American Middle West, and severe crop losses due to the wheat midge, Hessian fly and wheat rust (estimated to approximate 400,000 bushels in 1851 (12) ) resulted in a gradual shift to mixed farming which included other grains such as barley, flax and oats (5). In the Bay of Quinte region, domestic cheese and butter production had gained some prominence by 1850. With the construction of the first cheese factory in 1866, the dairy industry, which was found to be more profitable than grain farming, became a dominant force in the agricultural economy of the area.

A mixed farming economy has continued to characterize the region south of the Shield with specialization toward dairying, beef raising and cannery crops

in some areas. The poorly drained lacustrine soils have been almost entirely taken out of crop production and are now utilized for pasturing beef and dairy cattle.

Transportation developments beginning with the construction of the Erie Canal in 1825 and the Oswego Feeder Canal 1828 were significant factors in the shift from the traditional British market to the growing American market. These routes brought the growing population of the Atlantic seaboard states within easy reach of Canadian goods. Of major importance in this changing pattern of trade was the repeal of the British Corn Laws in 1846, which ended the preferential treatment of Canadian agricultural produce in the British market. The growing American trade in primary consumer goods was given impetus by the Reciprocity Treaty of 1854 and, although this treaty was repealed 10 years later, the pattern of trade which emerged has persisted to this day.

The construction of the early American railroads, particularly the Northern and Ogdensburg Railway which was completed in 1850 and connected with lines to Boston and New York, was a further external factor in the improved marketing flow from the Tweed District. In Upper Canada, the completion of the Grand Trunk Railway between Toronto and Brockville in 1856; the Grand Junction Railway from Belleville to Peterborough in 1879; the Kingston to Renfrew line in 1884 (13); and the Central Ontario Railroad from Picton to Bancroft, completed in 1900 (14); provided ready rail transport from the region of the Tweed District to Canadian consumer markets and to the American market via connecting links.

### CHAPTER III

#### LUMBERING AND SETTLEMENT

##### The Growing Forest Industry

In contrast to the agriculturally motivated settlement along the Lake Ontario front, the penetration and early settlement of the Ottawa Valley and the Canadian Shield was influenced by the exploitation of the area by the lumbering pioneers. This region, the bulk of which is tributary to the Ottawa River, contained extensive stands of high quality white and red pine which were the focus of a century of intensive logging activity.

When Britain was denied access to her traditional Baltic timber sources during the Napoleonic War, Canadian industry, assisted by preferential tariffs, moved to fill the gap. The early timber trade was almost entirely in square timber



which was subsequently processed in British sawmills. However, as the sawmilling industry developed, an increasing volume of trade was in deals - large dimension softwood lumber which was re-sawn in Britain.

The Ottawa Valley was the cradle of the timber industry in Upper Canada. Beginning in 1806 when Philomen Wright (15) floated the first raft of square timber down the Ottawa, a procession of timber operators moved up the river and its tributaries to harvest the green gold.

The Madawaska and the Mississippi rivers were major water routes in the early exploitation of the pine forests of the District. The first timber licenses were granted by British contractors who held cutting rights for the purpose of supplying timber to the Royal Navy. However, the activities of illicit timber operators eventually prompted a Proclamation by the Lieutenant-Governor in Upper Canada in 1826 under which residents of the Canadas were permitted access to forests in unsurveyed territories subject only to the payment of dues at scaling stations on the Ottawa River. An interesting clause of this proclamation imposed a penalty of double Crown dues on under-sized sawlogs and marked the first effort to regulate timber cutting by diameter limit. Subsequent to this, a system of timber licensing was imposed to regulate the industry, culminating in the passing of the first Crown Timber Act in 1849 (16).

While documentation is sketchy, it appears that timber operations, were underway in that part of the Tweed District along the Ottawa River, at least as early as 1820. A sawmill constructed at Arnprior in 1833 was probably one of the first in that area (15). This mill was subsequently acquired in 1851 by the McLachlin Lumber Company which held licenses on the Madawaska River as early as 1841 (17). Gillies Bros. & Co. Ltd., the largest lumber company operating in the District to-day, had its origin in a small mill on the Clyde River in Lanark County in 1842. During the next 30 years, Gillies logged on the Mississippi River system, also extending over the height of land onto the Trent River watershed to limits acquired from the Gilmour Lumber Company, pioneers in the area who had previously driven timber to their mill at Ottawa (15). Gillies relocated at their present mill site at Braeside in 1873.

The Egan Lumber Company was one of the major early woods operators, and appears to have been one of the first to operate in the Bancroft area of north Hastings county. Records (17) show that this company held timber licenses on the York River as early as 1842. The Bronson Lumber Company was very active in this

area beginning around 1860.

To the south, on the southern edge of the Shield in the country tributary to Lake Ontario, the burgeoning American market, made accessible by early canal construction, triggered a similar timbering development. Beginning around 1850, the industry reached a peak by the 1860's with the extensive operations of the two timber giants of that region, the Gilmour and the Rathbun lumber companies with mills at Trenton and Deseronto respectively. Also during this period, large volumes of sawlogs were exported across Lake Ontario.

The Caldwell-McLaren litigation arising from disagreement regarding the use by Caldwell of floatable streams which had been improved by McLaren, gave rise, after much debate in the law courts and the Ontario Legislature, to legislation enacted in 1881 which, in the public interest, gave right of use subject to the payment of reasonable tolls for the use of improvements (16).

Another law, introduced in 1873, prohibited the pollution of streams by sawmill waste prescribing penalties for infractions, the enforcement being in the hands of fishery officers (16).

By the early 1860's, the timber industry had penetrated to most of the area now covered by the Tweed Forest District. The pine and hemlock stands continued to support large-scale operations until the end of the century by which time the highgrading of the accessible original stands was largely completed. Subsequently, the softwood industry continued on a much reduced scale, relogging original cutovers and remnant stands of virgin timber. Operations have now shifted to second growth stands which came in after the major forest fires that swept much of the pine country following the earlier exploitation.

During the early part of this century, the American market demand resulted in the first major operations in the tolerant hardwood stands which grew on many of the better sites on the Shield. The demand for quality hardwoods resulted in widespread highgrading of these stands, at which time scattered areas of pine and spruce were also harvested. Fortunately for present industry, the hardwood stands are relatively free from serious fire losses and thus escaped the fate of many of the cutover pine forests. Also, the Ontario government had inaugurated its forest protection service and fire losses were substantially reduced. Thus, during the more recent period to the present, the hardwoods have supported successive operations for species and quality of timber not previously merchantable. The hardwood pulpwood industry, a very recent development in the area, has made



possible much better timber utilization and plays a significant role in the present rural economy of the District.

Much criticism has been directed at the timber waste of the early logging operations, and there is no doubt that they were wasteful in relation to present utilization standards. However, considered within the context of the economic conditions of the time, it is altogether likely that no other course of action was practical. The greater damage resulted from the careless use of fire which devastated large acreages of partially cut softwood stands, leaving behind a forest of 'chicots.'

#### Agricultural Settlement on the Canadian Shield

Agricultural settlement along the Ottawa River and on the Shield, followed the lumberman. Because, in the early 1800's, all supplies had to be transported to the lumber camps by water from the settled areas along the St. Lawrence River it was soon apparent that a ready market would be available for produce grown in the area. It is recorded (5) that, during the six year period ending in 1850, the Egan Lumber Company employed annually an average of 2,000 men who consumed 6,000 barrels of pork and 10,000 barrels of flour per year. In addition, their 1,600 horses and oxen required 60,000 bushels of oats and 1,200 tons of hay. Thus the magnitude of the supply problem is readily evident. Accordingly, the early lumbermen encouraged settlers to locate in their respective areas so as to have the advantage of locally produced food supplies with the further advantage of a ready labour force, complete with horses and oxen, during the fall and winter months. However, prior to the arrival on the scene of the settlers, many of the companies were forced to operate their own farms. One such farm was developed by the Egan Lumber Company on the York River which, in 1863 after 18 years cultivation, had a cleared area of 310 acres.

As early as 1820, in the Chats Lake area of the Ottawa River, squatters began to occupy and farm land, gradually extending their activities up the main river valleys (5). An early settlement of local notoriety was the settlement pioneered by the Scottish immigrant, Archibald McNab, who came to the area in 1823. He proposed a colonization scheme to the Upper Canada authorities, in support of which he was granted 81,000 acres of land in the area around Arnprior. In 1825, 84 settlers arrived from Scotland to settle the feudal domain of the Laird of McNab who duly imposed, without authority, feudal dues on all produce of the community in addition to retaining all timber rights to the land. The settlers, however,

eventually learned of the freehold lands held by their neighbours and after a near-rebellion and the intervention of the government succeeded in acquiring title to their lands. The Chief McNab departed in some haste, leaving behind only his name which the township encompassing the area now bears (15).

This early settlement was not without its problems, and early conflicts between settlers and lumbermen occasioned some sobering second thoughts on the part of the latter group. Beginning in 1826, when the Upper Canada land regulations first permitted land purchase on the installment plan, unscrupulous pseudo-settlers made the initial down payment and proceeded to strip the merchantable timber from the land, after which they abandoned it in favour of new areas. Since these lands were commonly contained in existing timber licenses, frequently representing valuable reserves of timber, the lumberman was understandably piqued. Worse still was the situation where river improvements, such as dams and timber slides, became the property of the settler who promptly charged the lumberman who built them for the privilege of their use. These inequities were not resolved until 1859 following vigorous protests from the woods industry (5).

While the geographic isolation of the shanties created an internal market which was unique in the agricultural economy of Upper Canada, this market was subject to periodic fluctuation depending on the vitality of the lumber industry. The market crisis of 1847, the outcome of overproduction, caused the virtual cessation of logging operations and a consequent loss of markets for the settlers' produce. As a result many were forced to abandon their land in the hinterlands and move to more settled areas.

A further more serious factor was the loss of local markets which resulted from the shifting locale of lumbering operations. Because the settler's choice of lands was based more on convenience to the shanties rather than careful consideration of the productivity of the soil, the farms were prone to early deterioration which caused much early land abandonment.

### Colonization Roads

In spite of the setbacks experienced by the shanty settlers, there was, during the 1850's, a profound belief that the Canadian Shield harboured large areas of land suitable for settlement. As late as 1868, the Report of the Commissioner of Crown Lands for the Province of Ontario (18) extolled the settlement possibilities, stating that "the land lies waste except for the luxuriant forests that await the settler's axe and offers homes and homesteads to the distressed millions of



older lands."

In support of this concept, and with secondary lumbering and military access in mind, Upper Canada embarked on a colonization road programme during the 1850's. Three major north-south routes - the Hastings, Addington and Frontenac Roads; and three main east-west routes - the Opeongo, Peterson and Mississippi roads, were constructed to grid the area. From these roads, secondary access routes were built to open up much of the intervening country where settlement was already established or considered desirable. This road system is shown on Map "A." Initially, free 50 acre grants were issued to settlers along these roads. Under the Free Grants and Homestead Act of 1868, forty townships in the so-called Ottawa-Huron tract, which was the area on the Shield, was opened as free grant land.

Despite a vigorous advertising campaign launched in Europe by the government, settlement progressed slowly along the colonization roads. The large tracts of agricultural land simply were not there, and the opportunities for the farmer were much greater in other parts of Ontario and in Western Canada where early settlement was underway. However, over the years, the best available land was gradually cleared and ploughed, much of it totally unsuited to agriculture even by early standards. With reference to an area in Lennox and Addington and Frontenac counties, the 1899 Annual Report of the Clerk of Forestry for the Province of Ontario (19) states:-

"Although thirty years have elapsed since settlement began in earnest ... it is still ... very thin and scattered. The country is rocky, or I might say mountainous with numerous lakes and streams and occasional depressions or ravines, in which is found a gravelly soil, full of boulders, but very strong, and capable of producing splendid crops of grain and vegetables and fine pasture. These spots of arable soil are not numerous and are of very limited extent; very rarely can a level field of ten acres be found, and this good land is practically all taken up. The lumber industry, on which many of the settlers at one time depended to a great extent for work in winter, and for a market for their livestock and hay and vegetables, is now a thing of the past, and, as they are a long way from a railroad, their market is a poor one. At present, the farmers in the district are hoping for a mineral development that has been long looked for, but slow in coming.

Throughout the whole four townships where it is not ploughed, a very vigorous growth of young timber is now standing"

This quotation states succinctly the problem encountered by agriculture on the Shield. Even at the time of earliest settlement, farms were established on marginal lands, and were subsequently abandoned within a very few years. The loss of the shanty market was a major contributing factor to this early fall-out as is noted with respect to the Ottawa Valley where it is stated (5) that: "many settlers

## MAP "A"



- 1 HASTINGS ROAD
- 2 OPEONGO ROAD
- 3 ADDINGTON (SNOW) ROAD
- 4 PETERSON ROAD
- 5 MISSISSIPPI ROAD
- 6 FRONTENAC ROAD
- 7 MONK ROAD
- 8 CARLOW ROAD

ONTARIO  
DEPARTMENT OF LANDS AND FORESTS



in the poorer and remoter localities were starved out; by 1880 the backwoods part of the Ottawa Valley was remarkable for the vast numbers of its abandoned clearances and buildings."

With the exception of a few relatively prosperous farming areas, agriculture on the Shield has been a marginal venture at best, and in recent years increasingly large acreages have been abandoned and depopulated. Those farms which continue to maintain a precarious existence do so only as a part-time venture supplemented by revenue obtained from farm woodlot and Crown land forest operations. The small, rough fields are totally unsuited to the competitive agricultural economy of to-day and their continued existence is due largely to social rather than economic factors.

## CHAPTER IV

### INDUSTRIES OF THE TWEED FOREST DISTRICT

The extractive industries have been the dominant industrial force throughout most of the Tweed District since the time of earliest settlement. In fact the fur trade considerably antedates the first permanent white communities. Secondary industry has tended to cluster along the more urbanized Lake Ontario fringe where transport services, plentiful water supplies and a satisfactory labour market have been available. Even to-day, the primary industries dominate the economy of the area.

#### Primary Industries

The fur trade in the Tweed District dates back to the earliest permanent French Settlement in the St. Lawrence Valley of Quebec. It is recorded (6) that the first crude map which Champlain obtained of the area was given to him by Algonquin Indians who were trading furs at Montreal in 1603. During the French regime and up to the Loyalist period, the fur trade was the only industry in the area. Following settlement the fur trade was soon overshadowed by new developments and declined in relative importance. To-day, the industry, because of present economic circumstances, plays a minor role in the economy of the area.

The forest industries, which dominated the industrial scene for almost one hundred years, are still a major factor in the District. The development of this industry has previously been traced in its effect on the early exploitation and settlement of the area. Beginning with the sawmill established at Kingston Mills in 1783, the industry grew until mills were located in all parts of the district during

the last half of the nineteenth century with the largest plants being along Lake Ontario at the mouths of main river systems, and along the Ottawa River. To-day, there are still in excess of 100 sawmills in the District varying in size from the small one-saw mill to the large modern Gillies Bros. and Co.Ltd. plant at Braeside on the Ottawa River. The pulp and paper industry, while of historical interest in the area, has never assumed large proportions. The earliest recorded paper mills were established at Strathcona, north of Napanee in 1875, and at Newburg in the 1880's (9). At the present time the Domtar Newsprint Limited mill at Trenton and the Strathcona Paper Mills are the only plants operating in the District.

During the latter part of the 1800's, following the construction of the main railway systems, pulpwood from the District was exported in some quantity to the American market. At present, a considerable volume of spruce, balsam and poplar pulpwood is exported from the District principally to the mills in the lower Ottawa Valley and at Cornwall.

The development of a substantial veneer industry has been hampered by the lack of quality hardwoods due, for the most part, to earlier highgrading for the American lumber market. At present, veneer mills are operating at Tweed and Calabogie and a considerable quantity of veneer is sold to the mills at Pembroke.

The earliest agriculturally based industry was the grist mill, commonly operated in conjunction with the local sawmill. However, by the early 1850's, domestic cheese and butter making had assumed some importance. The first cheese factory was established in Sidney Township in 1866 and in 1873 the Belleville area accounted for one-fifth of the Ontario cheese production (5). The dairy industry continues in importance to-day. Another industry of significance in the Belleville-Prince Edward County region has been the canning industry which has motivated specialized production of canning crops such as peas, corn and tomatoes.

The mining industry dates back to the early iron ore developments in the Marmora area around 1820 (20). Iron ore was also extracted in the vicinity of Madoc in the period from 1836 to 1845 and in Lavant and Palmerston townships in the 1880's (12). Other iron ore developments were located at Coe Hill in Wollaston Township in 1882 and the Bessemer Iron Mines in Mayo Township, which operated from around 1906 to the time of World War I (14). The first gold rush in Ontario was to the area north of Madoc following the initial discovery at Eldorado in 1866. The gold mining inspector for the Quinte Division reported in late 1866 that some 2,500 to 3,000 people had registered at the hotels in the area in a one-month period (21).



This gold mining activity reached a peak in 1869 but, due to the inadequate grade of the ore, was finished around 1885. One effect of this strike was the expansion of agricultural settlement, much of it on marginal land, to serve the new mines market.

The talc mining industry, established at Madoc in 1899 (20), and the quarrying industries located in various parts of the District, have been among the more successful sustained mining developments.

The atomic age came to the Tweed District in 1953 with the discovery of commercially exploitable uranium in the Bancroft area. This industry has been plagued by marketing problems during the past few years and its future is somewhat uncertain.

The Lake Ontario commercial fishery in the waters of the Bay of Quinte and around the shores of Prince Edward County has had significant local importance since the early days of settlement. With reference to the Weller's Bay area, one account of the industry in 1851 notes that "whitefish, salmon trout, together with other kinds of fish, were caught in great abundance... and (we have) known seines to be hauled two or three times in one night, catching from 2,000 to 5,000 beautiful whitefish at each haul, employing from 150 to 200 men cleaning and packing" (6).

### Secondary Industries

The Kingston, Napanee, Belleville, Picton and Trenton areas have been the scene of the principal growth of a wide range of secondary industries with lesser developments in the Arnprior and Renfrew section of the Ottawa Valley. One of the very early industries, Gibbard of Napanee, has been manufacturing quality furniture since 1835.

### Military Establishments

Although somewhat divorced from industry, it is worthy of note that the flat limestone plains of the southern part of the District were ideal locations for military air fields established under the Commonwealth Air Training Plan during World War II. The Trenton Air Force Base, headquarters of the Air Transport Command, continues to play an important role in the economy of the area.

In addition, Army Bases are maintained at Barryfield in the Kingston area and at Picton in Prince Edward County where large tracts of military land are owned by the Federal Government.

CHAPTER V

SOME LAND USE DEVELOPMENTS  
FOLLOWING INITIAL SETTLEMENT AND EXPLOITATION

Private Land

In 1946, land sales for agricultural use were terminated, thus bringing to a close the period of farm settlement. In point of fact, however, agricultural development had reached its greatest areal extent before 1900, and the peak of rural population occurred as early as 1851 in some areas. Table No. 1, compiled from data presented by O. A. Lemieux et al, to the Canadian Political Science Association in 1934 (22) show, for selected counties, the period of maximum population and the periods of maximum agricultural development as determined from Canada Census data.

TABLE 1  
 PERIODS OF MAXIMUM  
 RURAL POPULATION AND FARM DEVELOPMENT IN SELECTED  
 COUNTIES OF THE TWEED DISTRICT

<u>County</u>	<u>Maximum Rural Population</u>	<u>Maximum Number Farms</u>	<u>Maximum Acreage Occupied</u>	<u>Maximum Acreage Improved</u>	<u>Maximum Acreage Field Crops</u>
Lennox	1851	1881	1891	1891	1891
Addington	1861	1891	1901	1891	1891
Prince Edward	1861	1891	1881	1891	1891
Hastings	1881	1891	1921	1891	1891
Frontenac	1891	1891	1901	1891	1891

Land abandonment, which had generally become evident following the 1891 census, has continued unabated to the present. This marginal land represents one of the major land use problems in the area. A report prepared in 1962 by Department of Lands and Forests in the Tweed District (23) estimates a minimum of 250,000 acres of abandoned land. In addition, there is a further substantial acreage of unused marginal lands associated with active farms.

Through the efforts of the Moira, Napanee and Crowe Valley Conservation Authorities, and the Renfrew, and Lennox and Addington County Forest programmes, progress is being made toward re-acquiring marginal farm lands for conservation purposes.

Increasingly significant acreages are being purchased by absentee landowners, notably for private hunting preserves. This alienation of land for a



single, low intensity use may well become a serious problem.

The impact of the Federal Agricultural Rehabilitation and Development Act has not yet been fully assessed, but it is likely that it will make an important contribution to the effective use of marginal lands.

The continued improvement of agricultural practices on the better farm lands of the District has been a major programme of the Department of Agriculture over the years. Initially the Department worked through subsidized Agricultural and Horticultural Societies. However, following the establishment of the Ontario Agricultural College in 1874, the Agricultural Extension service was initiated, and Agricultural Representatives were appointed to the Counties of the Tweed District beginning with Prince Edward County in 1908.

The Department of Lands and Forests has prosecuted a private land forestry extension service in the Tweed District for at least 25 years. Except for limited success in the field of reforestation, there has been no general improvement in the management of private forest lands. During the period 1953-61, an average of 650,000 trees were planted annually on these lands (24).

Recreation development of private lands has been confined mainly to the subdivision of lakefront property for summer resort purposes. There is considerable scope for a continuation of this process.

Public access to private lands for hunting and stream fishing poses a problem which will undoubtedly be intensified by the continuing increase in the number of persons seeking this recreation. Serious conflicts, which threaten to precipitate the closure of many of these lands, have arisen already. Public access to lakes and rivers in the older settled areas of predominately private land is another serious problem.

The realization of the forestry, wildlife and recreational potential of non-agricultural lands in the Tweed District will be a major objective of the land use planner.

#### Crown Lands

The management of the renewable resources of the public domain has been the responsibility of the Department of Lands and Forests and its predecessors in the provincial government administration. In the early period of settlement and exploration, the government did little more than preside over the orderly disposition of these resources. However, during the last half of the nineteenth century, there was an increasing concern with the maintenance of the renewable resources

which gained early expression in the enactment of forest protection legislation.

### Forest Protection

"Wherever the lumberman went fire followed him, and, instead of leaving behind a forest improved by the removal of a few of the oldest and largest pine, there remained a forest of bare, limbless poles, where the masses of green trees had stood. Even now, years after the fires, the forest of dead pines or 'rampikes' stands so thick as to convey the idea of a great hop yard, and this effect is enhanced by the young, green forest which conceals the bottom of the dead pines" (19).

This excerpt from the 1899 Report of the Clerk of Forestry for Ontario bears ample testimony to the need for the forest protection measures which were initiated with the passing of the "Act to Preserve the Forests from Destruction by Fire," in 1878 (16). This Act applied only to settled districts and areas in the process of settlement. No provision was made for protection of timber limits not under municipal government (16). It was not until 1885 that forest rangers were appointed to patrol licensed land, the cost of their maintenance being shared equally by the government and the timber licensees. By 1897, it had been found necessary to locate rangers on other Crown land.

In 1917, spurred by disastrous fires in northern Ontario which resulted in great loss of life, the government passed the Forest Fires Prevention Act upon which the evolution of an effective system of forest fire control has been based. Under this act, a flat per acre charge was levied against timber licensees to cover the cost of forest protection.

In 1921-22 the Tweed (then Trent) District was established under a District Forester. The Trent District covered a somewhat larger area than the present Tweed District, the boundaries of which were set in 1946-47.

An average of 100 forest fires per year occur in the District, but the effective fire control system has greatly reduced the area burned. Since the establishment of the Tweed District there have been very few fires in excess of 500 acres. The largest recent fire was in Kaladar, Kennebec and Sheffield townships in 1949 when approximately 40,000 acres burned. This area, which was not then in the Fire District, was part of a 1,000,000 acre area added to the Fire District in 1957.

### Forest Management

Until relatively recently, the principal emphasis in forest management was on the regulation of the timber harvest. Commencing with the first timber sales in 1826, through successive Crown Timber Acts, this was under the local



authority of Crown Timber agents, established at Renfrew and Belleville, until 1935 when the management of timber resources came under the control of the District Forester at Tweed. Reforestation was the first positive management action, beginning with the rehabilitation of the Sandbanks area of Hallowell Township in Prince Edward County which started in 1920. However, except for participation in county reforestation programmes, the Department of Lands and Forests did not enter into a large scale forest tree planting programme until the early 1950's. During the past five years, approximately one million trees were planted annually on Crown lands. Concurrent with this, increasing emphasis has been directed to the rehabilitation of low quality forest stands, many of which resulted from past timber operations. There has been a growing awareness that the Tweed District, along with other southern Ontario regions, with its productive soils, favourable climate, desirable timber species, and readily accessible markets, will become an increasingly important timber producing area. The management of Crown and private forest lands for the maximum sustained productivity compatible with other forest uses, must be a goal of any land use plan.

#### Recreation

The use of public and private lands for informal recreational pursuits - hunting, fishing, picnicking, hiking, camping etc. - has increased over the years with internal population growth and the pressure of an increased flow of tourists.

Crown land sales for recreational use began shortly after World War I. During the period up to World War II, this development was slow but persistent, particularly in the more accessible parts of the District. The demand for summer resort land began to mushroom during the Second World War, and reached full stride during the boom years of the 1950's. This demand, which has affected both Crown and private lands, has continued unabated to the present. Since 1942, an average of 150 summer resort parcels have been sold each year. Recent policy restricting the sale of these lands to registered subdivisions has been an important innovation.

Up to 1956, park facilities in the Tweed District were limited to municipal parks and roadside parks operated by Ontario Department of Highways. The Department of Lands and Forests initiated its parks programme in the District in that year, with the acquisition of two roadside parks from the Department of Highways, together with the development of one new park.

The parks programme has been much accelerated during the last six years and to-day there is a total of six provincial parks with a total area in excess of

3,320 acres. Because of the great demand for park facilities, this developmental programme is continuing at a rapid pace.

### Fish and Wildlife Management

Until relatively recently, the enforcement of regulations was the major concern in the Fish and Wildlife field. However, during the past ten years, increased emphasis has been placed on management, including limnological studies, fish stocking, studies of the ecology of the main game birds and mammals and habitat manipulation projects. The emphasis, as in timber management, is on the production of the largest crop which is compatible with other land uses.

## CHAPTER VI

### CONCLUSION

When the first wave of settlers reached the Tweed District in 1783, the land resources seemed limitless. It remained only to clear the forest to realize this great potential.

When the early lumbermen ascended the Ottawa River in the early 1800's, a vast and seemingly inexhaustible forest wealth stretched before them.

And yet, by 1900, agricultural development had reached its areal zenith, and was already in a period of consolidation resulting in land abandonment. A century of exploitation and fire had reduced the great pine forests to small, scattered remnant stands.

The past 60 years have witnessed a continuation of farm abandonment and to-day these lands present a serious land use problem. Forest exploitation has proceeded through the previously untapped hardwood forests to the point where, to-day, the forest industries of the District must subsist on timber from clean-up operations in mature stands and improvement cuts from immature stands.

In retrospect, what could have been done to prevent this over-exploitation of the land and forest resources? Would a knowledge of the future consequences have materially altered the course of events? It is very doubtful. The land was there, and the forces of colonization were virtually irresistible. Lacking the transport routes which permit ready dispersal to-day, the early settlers had no choice but to expand their agricultural community through diffusion to adjacent lands. The factor of group security also contributed to this concentricity. In addition, these early farming operations, even on the marginal lands, were



relatively successful in terms of the prevalent subsistence economy. It was not until agricultural markets became more competitive, and the cumulative effect of inadequate land husbandry began to show up in land deterioration and lower productivity, that the abandonment of marginal lands became inevitable. In the meantime, these lands had contributed several generations of sturdy rural stock to the growing population.

Similarly, prescience would have had little effect on the nature and rate of exploitation of the forest resource except possibly in one critical area - that of fire prevention. The simple fact remains now, as then, that forest operations are based on an economically marketable commodity, and no altruistic concern for the welfare of the forest can alter this fact. Undoubtedly, some conservation measures might have been possible, but it is highly unlikely that the end result would have been much different - unless effective forest protection measures had been implemented. It is axiomatic that the much higher degree of utilization possibly in the industry to-day is a product of greatly changed economic conditions.

The fact remains that the rapid development of the country had its genesis in the human resources of the early southern Ontario agricultural communities and, to a considerable extent, in the capital resources acquired through the forest industries which tapped the only dollar-earning export commodity available during the early period of settlement.

As has been noted, this development has not been without cost. The abandoned non-productive marginal farmlands of the District constitute perhaps the major land use problem in the area. As has been previously noted, there are conservation agencies engaged in the acquisition of this type of land, but the pace is much too slow. Full scale governmental intervention is necessary to solve this problem.

Another problem of almost equal significance is the rehabilitation of the forests of the District. As early as 1898, a move was made to prevent further agricultural encroachment through the creation of the Eastern Provincial Forest under the Forest Reserves Act. A much more recent move to preserve key historic and scenic areas together with areas of ecological significance resulted in the passing of the Wilderness Areas Act of 1959. The very great task of achieving a reasonable level of forest management on both Crown and private lands has received much attention during the past decade. The perplexing problem of stimulating forestry on private lands has not been solved and yet must be if we are to realize the potential productivity of the non-agricultural fraction of our farm lands.

Recreation is a relatively recent addition to the land use picture insofar as formal park areas and recreational reserves are concerned. However, it will inevitably achieve major importance in the Tweed District, located as it is within easy reach of the major southern Ontario population centres. Any land use plan must make generous provision for this resource use. The great growth in the demand for recreation, including facilities for hunters, fishing and watersports, may well require the reappraisal of existing governmental regulations affecting the alienation of the right of access to the resource.

In conclusion, the Tweed District has paid the inevitable price of progress.- While land use planning would have achieved very little in the early settlement period, it is now long overdue. It is true that significant advances have been made in planning and management for forestry, wildlife, recreation and agriculture; but too often these plans have been independently conceived without giving adequate consideration to the integration of objectives and action which can only be achieved through a well devised land use plan.



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## SECTION 2

### DEPARTMENT RESPONSIBILITY

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The objective of land use planning is to achieve the maximum economic and social benefit from the renewable natural resources of the Tweed District.

The Department of Lands and Forests is responsible for the management of that segment of these resources which is held in right of the Crown in the Tweed District; and is further responsible for providing advice and assistance in the management of the resources held in private ownership. In consideration of the present and future demand, the aim must be to achieve the maximum use of the individual resource which is compatible with the optimum utilization of the total resource base.

The District Forester is responsible for the work of the Department of Lands and Forests in the District. As such, he must plan the allocation of the manpower, money, and equipment available to him so as to achieve the highest possible degree of management of the natural resources under his jurisdiction. He must ensure that the activities of each of the operating Branches in the District give full consideration to the integration of the objectives and activities of their respective management programmes. In consideration of the limiting factors of staff and budget, he must further ensure that the management effort gives priority to the most suitable and productive areas of the district, within the context of the overall resource management plan.

#### A. TIMBER MANAGEMENT

The objective of the Department is the sustained yield production of the optimum volume of acceptable forest products, to meet current and future market demands, on those lands best suited to production forest use. This is carried out under the authority of the Crown Timber Act, the Forestry Act, and Trees Act and the regulations made thereunder, together with the policy directives of the Department. The ownership of the land is a major factor affecting the attainment of this objective.

##### (1) Crown Lands

Under the guidance of detailed timber management plans for the sustained yield management of Crown lands, the Department is responsible for the growth and harvesting of timber crops in a manner which is compatible with other legitimate forest uses such as wildlife and recreation. This involves the orderly sale of merchantable timber, control of logging operations, measurement of the timber



harvested, re-establishment of the forest crop and the management and protection of the crop to maturity.

## (2) Agreement Forest Lands

The Department is responsible for the management of lands owned by Municipalities and Conservation Authorities within the terms of the agreements executed under the Forestry Act. While timber production is specified as the primary land use, the management aims at the development of the total resources of the areas under agreement.

The Department is also responsible to promote the expansion of the agreement forest scheme to effect better land use practices on forest lands.

## (3) Private Lands

The Department has no direct control over the management of private forest lands. In order to achieve the optimum productivity of these lands, the Department is responsible for providing advice and assistance to private landowners in the management of their forest lands and the manufacture and marketing of their primary forest products.

The Department also has a responsibility to promote the use for forest production of those lands which are best suited to this use. This may involve recommendations for altering existing land uses to achieve greater economic and social gain. This may also involve recommendations for the withdrawal of land from the private sector for management under a public agency.

## B. FISHERIES MANAGEMENT

### (1) Commercial

In commercial fish management the objective of the Department is to harvest and maintain population of non-game fish species in inland waters, and to harvest surplus fish populations in Lake Ontario, and at the same time maintain adequate brood stocks for self perpetuation.

This is carried out under the Authority of the Game and Fish Act and the Ontario Fishery Regulations, together with the policy directives of the Department.

The harvest is regulated by licencing qualified individuals with the application of certain restrictions which are designed and enforced to protect the individual, the commercial fishing industry, the species of fish being harvested, and the public.

## (2) Sport

The objective of sport fish management is to harvest and maintain an adequate stock of desirable fish species in waters of the district suitable to them.

This is carried out under the Authority of the Game and Fish Act and the Ontario Fishery Regulations, together with the policy directives of the Department.

The reclamation of new fishing waters by the use of fish toxicants, and the re-introduction of desirable sports fish contributes considerably to the fishery as a whole.

The protection of game fish spawning areas and the stocking of hatchery reared fish for introductory purposes and to supplement natural reproduction are carried out towards this objective.

Co-operation with the Ontario Water Resources Commission on pollution control and the permit system for the use of aquatic herbicides, forms an important part of management of local waters.

Enforcement patrols are carried on continuously throughout the year to effect protection of the fish resources in district waters.

## C. WILDLIFE MANAGEMENT

The objective is to manage the wildlife of the district so as to achieve optimum population levels, and to provide the public with the opportunity to harvest the annual surplus both on Crown and Private lands. Management and enforcement are carried out under the provisions of the Game and Fish Act, the Migratory Birds Protection Act, and the Wolf and Bear Bounty Act, and the respective regulations and policy directives.

In order to achieve this objective, habitat improvement programmes have been initiated with respect to the more important species, such as waterfowl, fur bearers and big game, Deer habitat management is extensively carried out on Crown lands in the northern one-half of the district under a co-operative scheme of the Fish and Wildlife and Timber Branches. The objective is to maintain and, if possible, increase the huntable game population. The divided jurisdiction on private lands precludes direct action by the Department in the management of game populations on these lands. However, advice and assistance is provided to private landowners who wish to carry out management projects.

Wildlife surveys are carried out continuously with the objective of providing the basic data for the manipulation of game regulations to achieve the best utilization of the harvestable crop. The Department also co-operates with



Municipal authorities to achieve satisfactory hunting regulations within the Municipalities.

In the management of fur bearers, the Department aims, through the quota system, to achieve a controlled harvest of the population surplus, maintaining an adequate breeding stock. On Crown lands the trap-line system is employed, while resident trapping licences are issued on private lands with the permission of the landowner.

The Department is responsible, through lectures, courses, and personal contact, for public education relative to wildlife management; and Department personnel participate in special programmes such as the fur auction sales through which the aim is to promote the production of high quality furs through the improvement of trapper skills.

#### D. RECREATION MANAGEMENT

##### (1) Provincial Parks

The objective of the Department in the Tweed District with regard to Provincial Parks is one of a planned expansion, development and operation of a provincial park system, as set out in the Provincial Parks Act. This is in accordance with the terms of the Act, and other forms of standard policy in order to serve the needs of all those who seek this type of recreation.

This programme is being carried forward by planning to meet future requirements; (South Eastern Region Parks Planning Report - 1962; Long Range Parks Plan Including Water Access Points and Municipal Parks Tweed District March 1959; Long Range Recreation Development Plan, Tweed District, June - 1960; Long Range Parks Improvement Programme 1960-65 Tweed District, August, 1960) and a continuing effort to maintain a high standard of maintenance and operation of existing parks.

##### (2) Sale of Crown Lands

The Department is responsible for administering the controlled disposition and use of Crown lands as provided for under the terms of the Public Lands Act and Regulations, and relative acts dealing with land, water, and the beds of lakes and rivers.

Although the Tweed District is not in close proximity to the large urban centres, there is a significant and increasing pressure on recreational lands from the more populous areas along the Lake Ontario -- St. Lawrence front and northeastern United States. The objective of the Department is to regulate the alienation of land

for recreational use so as to ensure the provision of adequate Crown land to meet the current and projected public demand for recreational opportunities. Lake frontage not required for public use, and where there is in excess of twenty-five per cent of the shoreline remaining in the Crown, is being surveyed into Crown subdivisions to keep pace with the demand. Additional hunt camp sites are considered where such camps will not interfere with existing camps in an area. Areas are designated for day-use hunting within which no new hunt camps are authorized.

With the exception of special claims against Crown land under Sections 18 and 19 of the Public Lands Act, all Crown lands in the district will be retained for recreational, wildlife, and timber use. Any other disposition of Crown lands will only be considered as part of an orderly development programme.

### (3) Canoe Routes

Interest in wilderness and canoe camping in the Tweed District has increased markedly in recent years. The objective of the district is to develop and maintain suitable canoe routes on the basis of current investigations and a proposed long range development and maintenance plan. This plan will require Department approval prior to its initiation.

### (4) Water Access Reserves

With the objective of providing public access to all key lakes within the district, as well as landing areas from the water at intervals on lakes, there is a continuing policy of reserving lots for this purpose on Crown land sub-divisions, and existing recommendations to purchase parcels of patented land on those lakes where public access is not provided by private enterprise.

Car parking and boat launching is the major consideration in setting aside water access areas.

There are presently 35 designated water access areas in the district and 30 additional sites have either been recommended for purchase or withdrawal from Crown land disposition. (Resources Planning Areas Report, South Eastern Region - November 1962).

### (5) Walking Trails

In keeping with the Deputy Minister's letter of May 24, 1962, and with the increase of public interest in outdoors walking, four "walking trails" have been recommended for immediate and long range development (Resources Planning Areas Report, South Eastern Region - November 1962). Additional walking trails are being investigated.

SECTION 3

INFORMATION AVAILABLE



### SECTION 3

#### INFORMATION AVAILABLE

##### A. BASIC DATA AVAILABLE FOR USE IN LAND USE PLANNING

1. The land classification of the Tweed District has been completed by G. A. Hills and his staff of the Research Branch and landscape unit maps, landscape descriptions, and use potential ratings have been completed as described in Hills' "Ecological Basis for Land Use Planning." These ecological data are the basis for much of this plan. The land classification work is the product of many years of data gathering, originating with the land typing programme.
2. Forest Resources Inventory Report of the Tweed District -  
This report covers the entire district and includes forestry and base maps at a scale of 4 inches = 1 mile.
3. Department of Agriculture -  
Soil Survey Reports for Prince Edward, Lennox and Addington, and Hastings Counties.
4. Department of Agriculture Economics, Ontario Agricultural College, Guelph, Ontario -  
Background Studies for Resource Development in the Tweed Forest District, Ontario.  
Study No. 3 - Industrial Development Survey  
Study No. 4 - Plans and Attitudes of High School Students
5. Department of Economics and Development -  
Lake Ontario Region Economic Survey - 1961
6. Department of Planning and Development -  
Moir Valley Conservation Report - 1950  
Napanee Valley Conservation Report - 1957  
Department of Lands and Forests -  
Crowe Valley Conservation Report - 1963
7. Department of Mines - Federal and Ontario  
Miscellaneous geological and mineralogical reports
8. Tweed District Office -  
Miscellaneous file reports covering various facets of resource management in the District. The main operational reports and plans are described in Section 6.

## B. ECONOMIC AND SOCIAL TRENDS IN THE TWEED FOREST DISTRICT

In 1901, the population of the Tweed Forest District was 172,467, of this number, nearly 104,000 persons, or 60 per cent, were resident in rural areas. In 1963, the population of the district had increased to 235,607, an increase of 36.6 per cent in the 62 year period. The rural population, over the same period, had increased to 86,099 or 37 per cent of the total population. This change is presented graphically in Illustration No. 1, and in tabular form in Table No. 2.

TABLE NO. 2

### DATA BY DECADES POPULATION - TWEED FOREST DISTRICT

<u>COUNTY</u>	<u>1901</u>	<u>1911</u>	<u>1921</u>	<u>1931</u>	<u>1941</u>	<u>1951</u>	<u>1963</u> <sup>(1)</sup>
Frontenac	44,534	42,604	44,494	45,756	53,717	66,099	77,347
Hastings	59,291	55,803	57,523	58,846	63,322	74,298	86,219
Lennox - Addington	23,346	20,386	18,994	18,883	18,469	19,544	23,566
Prince Edward	17,864	17,150	16,806	16,693	16,750	18,559	19,656
Lanark (part)	3,212	2,775	2,388	2,215	2,086	1,947	1,679
Renfrew (part)	24,220	23,720	22,784	22,223	21,969	24,582	27,140
TWEED DISTRICT	172,467	162,438	162,989	164,616	176,313	205,029	235,607

(2)							
Total Urban - Suburban	68,577	69,650	76,947	81,366	93,880	122,402	149,508
Total Rural	103,890	92,788	86,042	83,250	82,433	82,627	86,099

(1) Canada Census data not available for 1961 - Municipal Directory for 1963 used.

(2) Urban - Suburban areas arbitrarily delineated as including cities, large towns along major communication routes, and townships forming part of these residential - commercial - industrial complexes.

Frontenac County - Kingston City, Kingston Township, Pittsburgh Township

Hastings County - Belleville, Trenton, Sidney Township, Thurlow Township

Lennox-Addington County - Napanee, Bath, Ernestown Township, N. Fredericksburgh Township

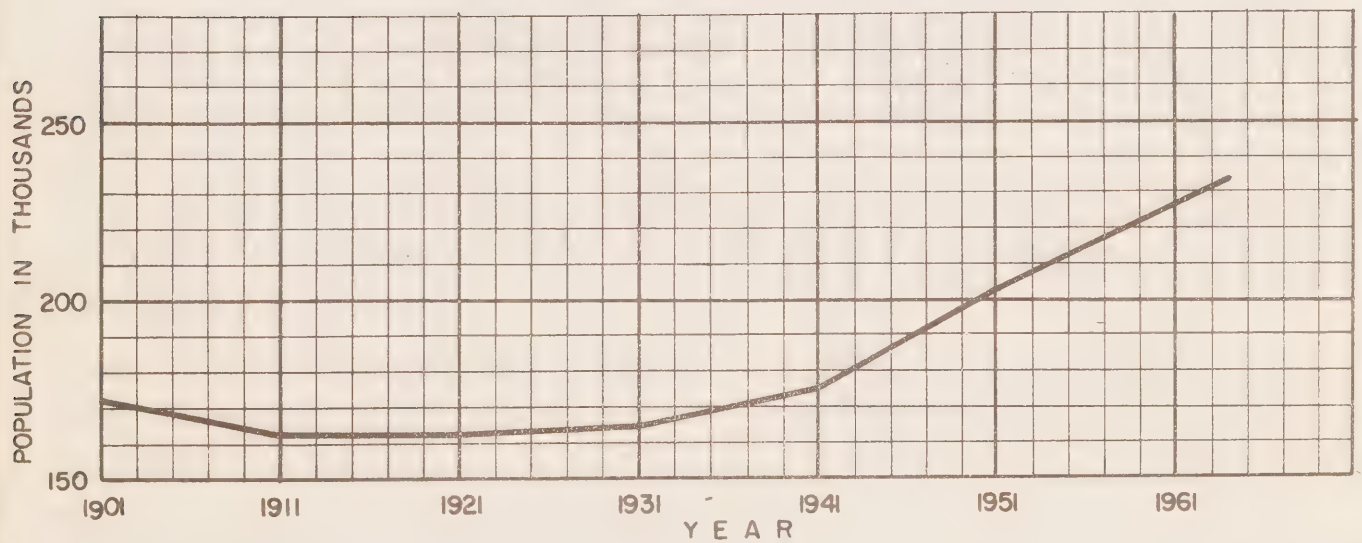
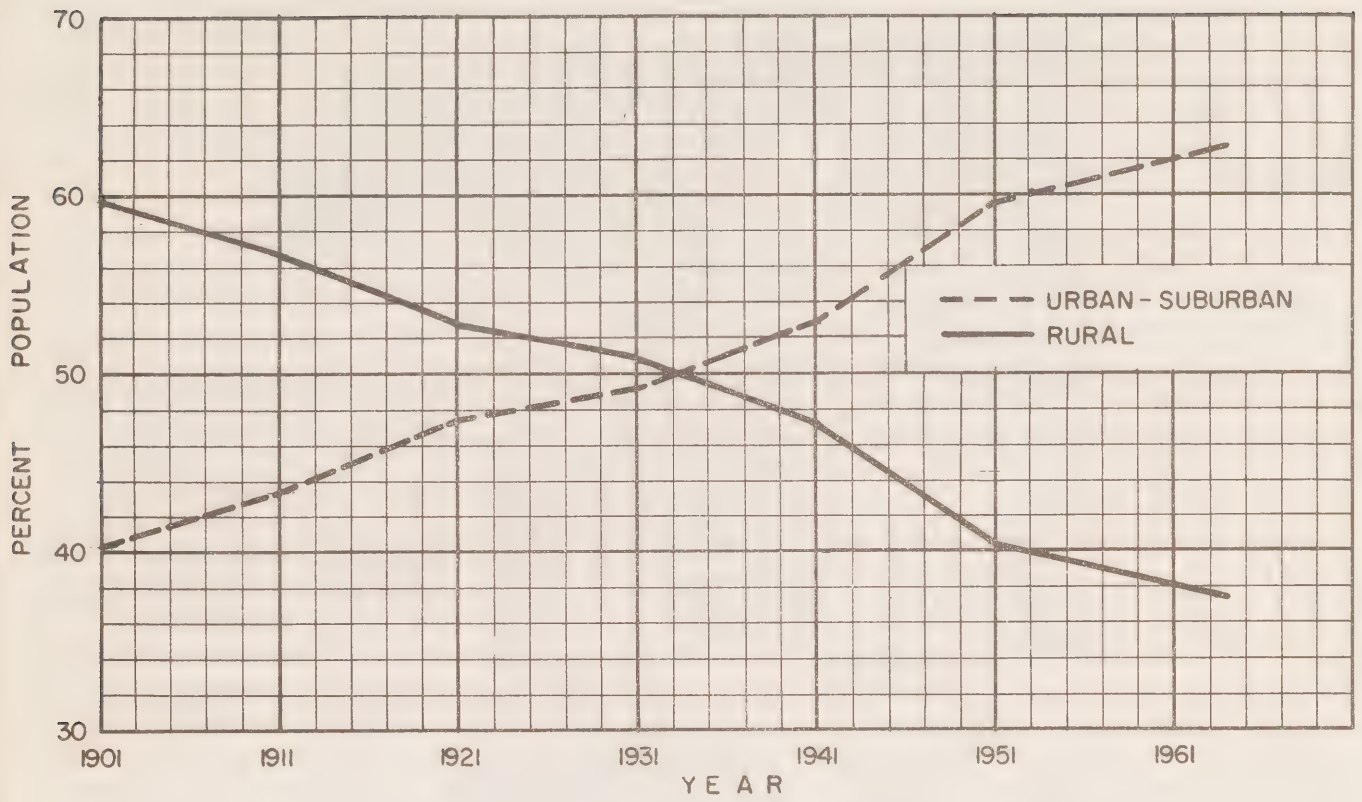
Renfrew County - Renfrew, Arnprior, Braeside, Horton Township, McNab Township.

The population is estimated to be currently increasing at a rate of 1.5 per cent annually. In 20 years' time, at the end of the planning period considered in this plan, the population will approximate 317,500. Over the same period, it is estimated that the urban population will increase at a rate of 1.8 per cent annually to a total of 213,500, representing 68 per cent of the total population. Thus, by 1983, the rural population will represent only 32 per cent of the total.

Map "B," taken from information compiled by the Ontario Department of Agriculture, shows the changes in occupied farm lands for the period 1941 - 1961. Of the total of 77 townships in the district, 34 showed a decrease in occupied farm lands which was in excess of 10,000 acres. Only nine townships showed a change of

POPULATION CHANGES

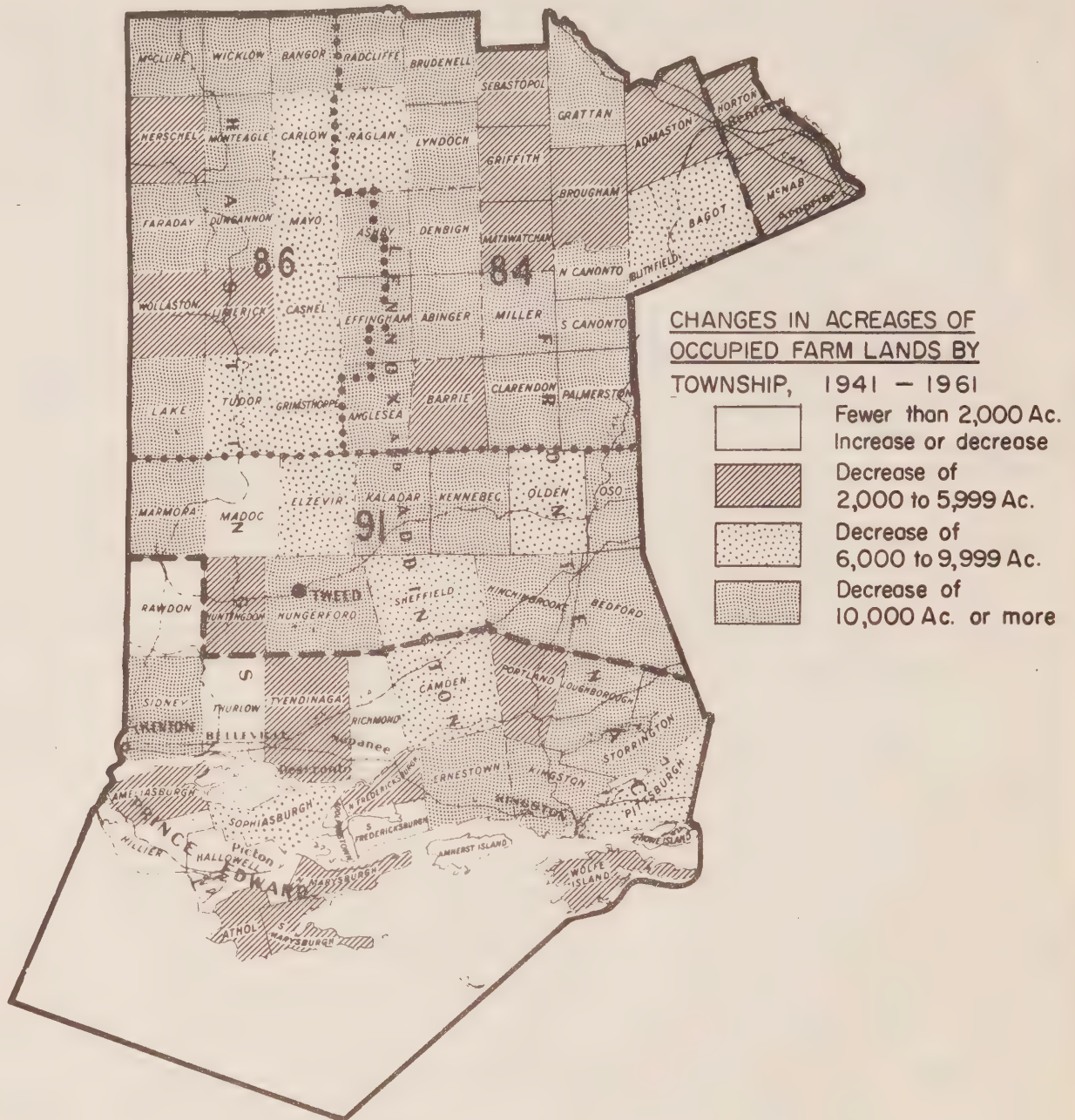
TWEED DISTRICT





MAP "B"

# TWEED DISTRICT



MILES



ONTARIO  
DEPARTMENT OF LANDS AND FORESTS

less than 2,000 acres.

The above quoted statistics illustrate quite clearly the depopulation and land abandonment in rural areas, and the corollary population growth in the urban - suburban zones which occur along the Lake Ontario shoreline and along the Ottawa River, in both cases coincident with the major rail, highway, and water communication routes, and also coincident with the prime agricultural areas. Map "C," shows the population density of the townships in the Tweed District, and clearly indicates the zones of relative high population.

Agriculture, which in the late 1800's was, with the forestry, the main economic base of the district, has declined markedly in importance. While still important and flourishing on the better agricultural soils, the retreat from the poorer soils, particularly on the Canadian Shield, has generated a serious land use problem in more recent years. Of perhaps even greater significance is the continuing social problem created because of the increasing isolation of the remnant residents throughout the rural area, and the serious loss of tax base by the affected municipalities. This situation will undoubtedly deteriorate further as the older rural residents, now tied by circumstance to their land, gradually disappear from the picture. While an overall increase in rural population is predicted, this increase will tend to be centred in the smaller towns and villages such as Picton, Tweed, Madoc, Eganville, etc., and will also be associated with other developmental factors - particularly in the recreational field. Barring a sharp shift in government policy toward the subsidization of agricultural production on marginal soils, the depopulation of rural farming areas will continue.

Forestry is the other major employer of rural manpower. While current and planned management practices will undoubtedly increase employment opportunities over the long run, no significant improvement can be expected within the 20 year period of this plan.

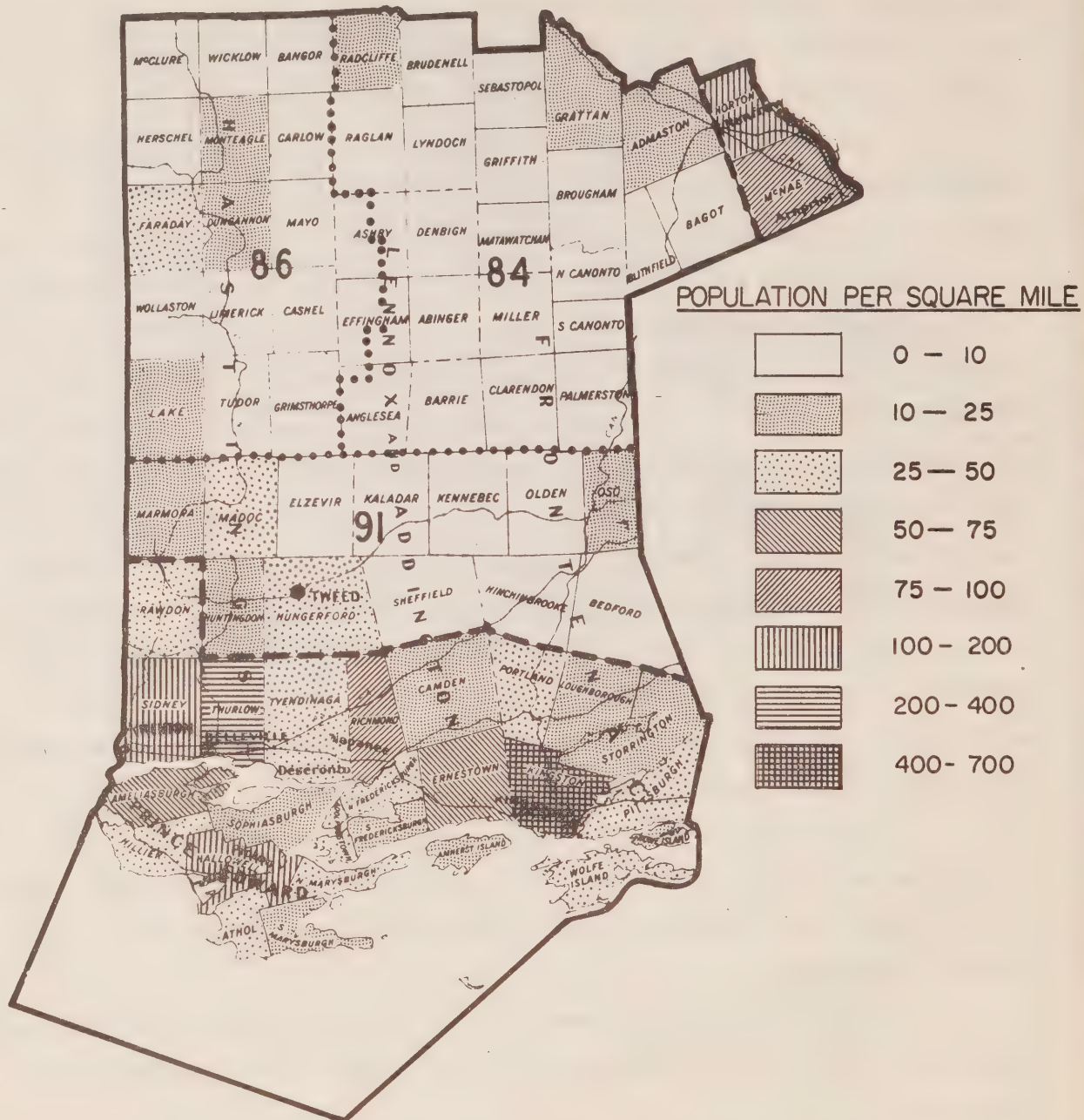
The continued development of the relatively underexploited recreational potential of this district presents the main promise for improvement of the lot of rural areas.

Urban and sub-urban expansion will be based on continued commercial - industrial growth, primarily along the Lake Ontario shoreline. The publication, "Background Studies for Resource Development in the Tweed District - Study No. 3 - Industrial Development Survey," published in late 1963 Department of Agriculture Economics, Ontario Agricultural College in Guelph, reports that of 53 firms surveyed



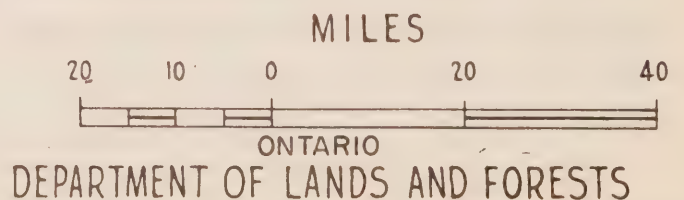
MAP "C"

# TWEED DISTRICT



TOTAL POPULATION 230,128

HASTINGS COUNTY	80,172
FRONTENAC COUNTY	78,496
PRINCE EDWARD COUNTY	19,656
LENNOX-ADDINGTON COUNTY	22,990
RENFREW COUNTY	27,135
LANARK COUNTY	1,679





in this district, almost 53 per cent had located within the last 20 years. The newest industries were in the concrete, heavy steel, and other heavy goods group. This study lists the following advantages of the district for industrial development as determined from interviews in the district:-

- (1) There is a relatively large pool of underemployed labor throughout the District.
- (2) The area is situated midway between the large markets of Toronto and Montreal.
- (3) There are good highways connecting the District to the large markets of Southern Ontario, Toronto and Montreal.
- (4) Water transportation is available from the southern part of the District.
- (5) Rail transportation is available from the southern part of the District.
- (6) The southern part of the District is suitable for the production of a variety of agricultural products including canning crops.
- (7) Uranium, fluorspar, iron and ground talc are available for mining,
- (8) There is a supply of timber suitable for pulp.
- (9) There are a number of lakes and streams which offer opportunities for the development of facilities for tourists, holidayers and general recreation seekers.

The disadvantages reported as most frequently mentioned were:-

- (1) The labor force although quite large in number is relatively unskilled.
- (2) The local market is relatively small.
- (3) The closest large markets are at Toronto and Montreal; distance of 115 and 225 miles respectively.
- (4) Some of the raw materials of the District, especially of the forests, are of a relatively low quality.
- (5) There is a shortage of training facilities for vocational and technical trades.
- (6) There is a shortage of access roads in the northern part that hinders development of a tourist industry.
- (7) The smaller urban centres do not have adequate sewer and water facilities for industrial expansion.
- (8) There is a shortage of sufficiently cheap transportation facilities for heavy industry.

It is evident that the major elements for an expansion of industry are present in the district - transportation facilities, labour force, an increasing internal market, and a readily accessible external market in the Mississauga conurbation to the west and the Ottawa - Montreal area to the east. The markets of the American north-east are also within easy range of industry in the lakeshore area. The disadvantages cited above are largely controllable given the need and desire to

improve the climate for industrial development.

Increasing urbanization in this district and, in fact, throughout the whole of southern Ontario, together with higher surplus income and a shorter work week, will result in a very large increase in pressure on the natural resources of the district, particularly the recreational resource. Current projections indicate an Ontario population in excess of 9 million at the end of the 20 year period covered by this plan. This compares with a present population of around 6.5 million (January 1964). In addition, the densely populated north-eastern United States can be expected to exert increasing pressure on the recreational resources of the Tweed District.

In summary, it is predicted that the depopulation and abandonment of rural marginal farm lands will continue unabated, with rural population gains in small towns and villages and in important recreational areas. The urbanization of the Lake Ontario shoreline will accelerate, and the increasing population of the district, and of the province as a whole, will exert a much stronger influence on the natural resources of the area.

SECTION 4

LAND USE CAPABILITY RATINGS

OF THE

TWEED FOREST DISTRICT

by  
G. A. Hills  
Research Branch



<sup>1</sup>  
G.A. Hills

CHAPTER I  
INTRODUCTION

The objective of this report is to provide a statement of the comparative potential of the land and water resources of the Tweed Forest District in as concise and non-technical a form as possible. To do this without a scientific framework would be meaningless for land-use planning but a detailed explanation of the system of land classification used in this appraisal is beyond the scope of this present paper. Therefore, in this presentation, a scientific framework will be used with a minimum of digression for discussion of definitions and principles. The salient points of the approach are outlined in this introduction and incidental references to it will be made throughout the text.

Area of District

The Tweed Forest District is one of twenty-two administrative districts supervised by the Department of Lands and Forests of Ontario. The total area of the district is approximately 8,500 square miles. Of this area, approximately 1,850 square miles is water, the largest amount (1,450 square miles) being Lake Ontario. The lakes and streams comprising the 400 square miles of inland water are variable in size, but none exceeds 16 square miles.

Physiographic Definition of Land Units

To assess adequately the resource potential of a large area such as the Tweed Forest District the area must be subdivided into smaller units. Because of large variability in climatic conditions, topography, soil texture and depth over bedrock, lake and stream pattern, etc., the capability of various areas of land and water for crop production (be it farm, timber, wildlife, fish or recreation) will seldom be the same. Thus, it became necessary to divide the Tweed Forest District into land units small enough to be relatively homogeneous but large enough to be useful for resource planning purposes.

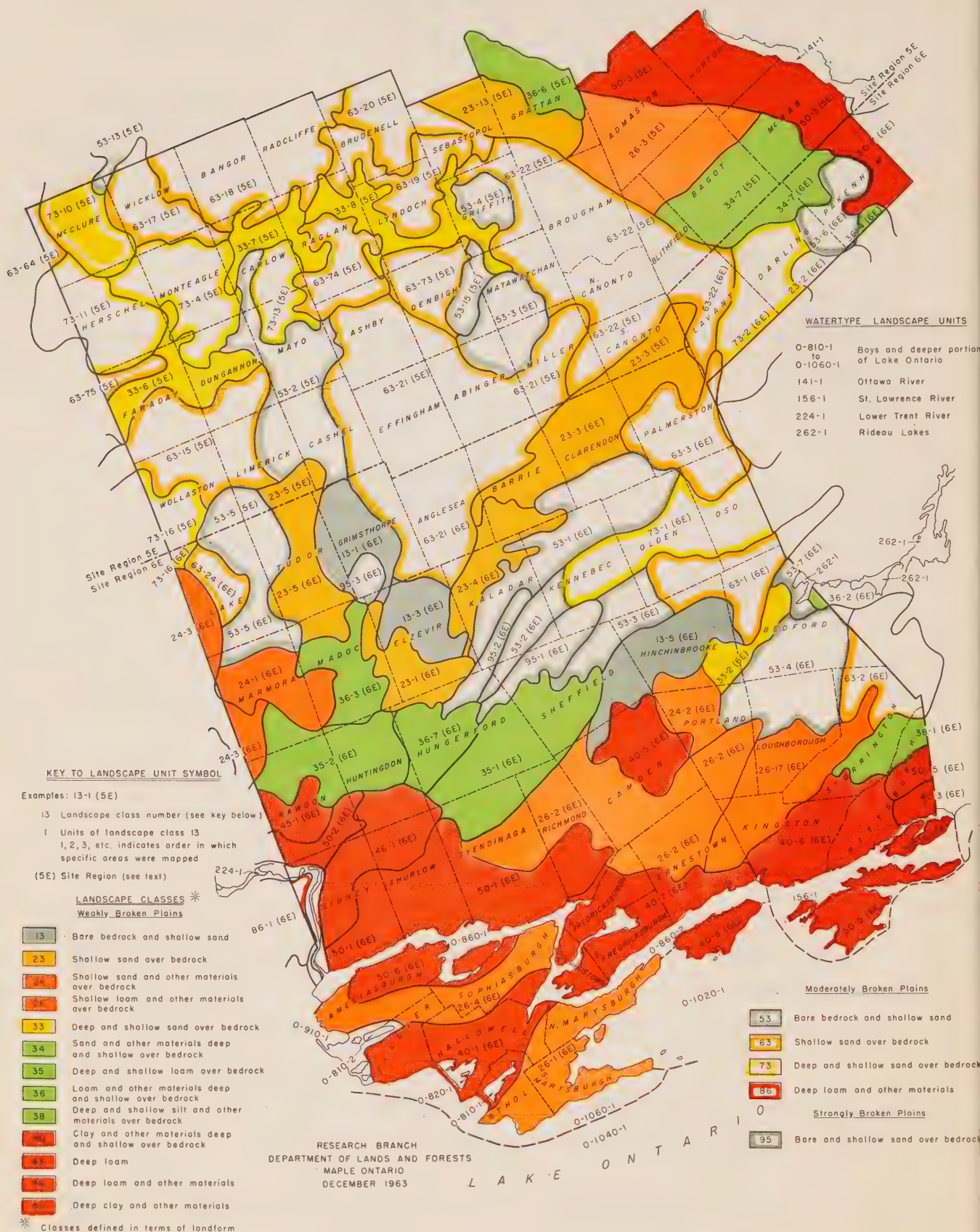
This was accomplished by subdividing the District into first, land units large enough to be useful for planning purposes; the subdivision being made on the

<sup>1</sup>

Chief Research Scientist, Research Branch, Ontario Department of Lands and Forests, Maple, Ontario.



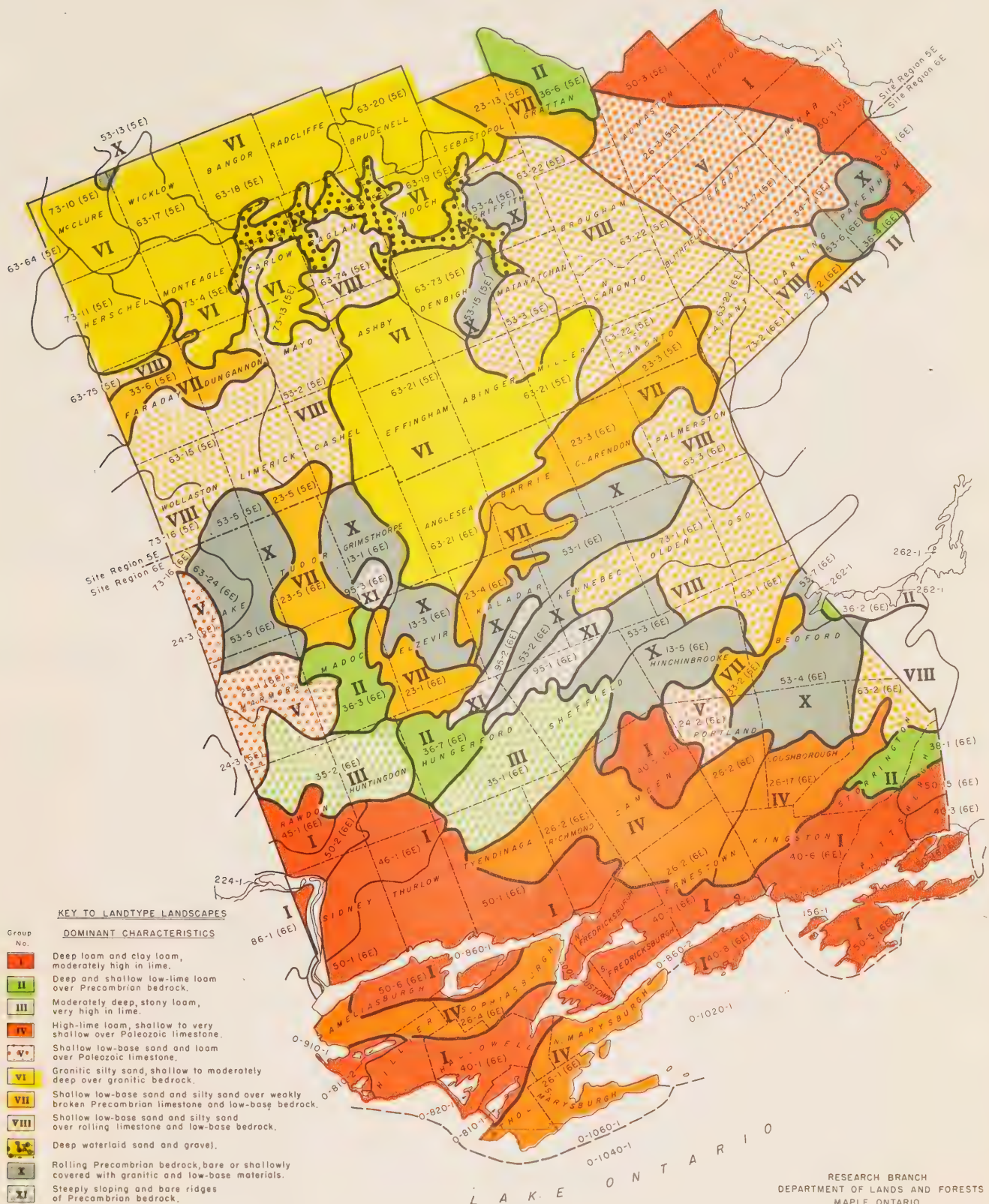
# LANDSCAPE UNITS OF THE TWEED FOREST DISTRICT CLASSIFIED BY LANDFORM FEATURES





# MAP No. 2

## BROAD GROUPING OF THE LANDTYPE LANDSCAPES OF THE TWEED FOREST DISTRICT TO INDICATE PATTERNS OF BIOLOGICAL PRODUCTIVITY





basis of natural physical features. However, even these units contained too much variability in local climate, topography, soil drainage, etc. between areas; therefore it was necessary to subdivide these units into smaller units which were relatively homogeneous in nature. Thus, the Tweed Forest District was divided into two main levels of land units.

#### Local Station or Site

A local site is a relatively homogeneous area such as a field or forest site where crop production may be measured and compared with that of other local sites. The local sites were selected on the basis of their natural physical characteristics, i.e. topography, soil texture, depth over bedrock, etc.

#### Landscape Unit

A landscape unit is an area of land having a pattern of sites which is as uniform as possible within the limitations of adequate size (sixteen square miles). With few exceptions, this size is required for resource planning such as that of farm communities and forest operations. Within such size limitations, boundaries are drawn to secure the narrowest possible range in topography and soils and having regard to differences in lake and stream patterns.

#### Rating the Resource Potential of Land Units

##### Use-Capability Classes

The first step in estimating the resource potential of so vast an area as the Tweed Forest District was to rate each local station or site according to its ability for potential production for each of five different uses - agriculture, forestry, wildlife, fish and recreation. These ratings were known as use-capability classes and ranged from Class A (the best) to Class G (the poorest). As an example, local site X would be rated and placed in one of the seven classes for each of the five different uses. Thus, local site X might have a use-capability class of G (poorest) for agriculture, C reasonably good for forestry, A the best for recreation, and so on. The same procedure would be used to rate all local sites.

##### Use-Potential Ratings

The next step was to rate each landscape unit in terms of potential production for each of the five general uses. These ratings were known as use-potential ratings and ranged from first rate (the best) to seventh rate (the poorest). The use-potential ratings for each landscape unit were developed for each of the five



resource uses in two steps.

Three-Letter Rating The area of all local sites having the same use-capability class within a landscape unit were determined and expressed as a proportion of the total area (i.e. 10 per cent of the landscape unit rated A, 20 per cent rated B, etc.).

The dominant rating or ratings (based on area) were then chosen and placed in a three-position rating in order of their proportions. Thus, a rating of BCD indicates in a general way that 50 per cent of the area rated B, 30 per cent C and 20 per cent D. If there were only one dominant rating then the three-position rating would be AAA or BBB, etc. If 80 per cent of the landscape unit was rated A and 20 per cent C then the three-position rating would be AAC.

If more than three use-capability classes occurred within the landscape unit, three averages were obtained and placed in order of distribution. As an example, a three-position rating of BEG could have been derived from the following pattern: A - 10 per cent, B - 30 per cent, C - 10 per cent, D - 10 per cent, E - 15 per cent, F - 5 per cent, and G - 20 per cent. These seven actual percentages are combined into three averages as follows:

<u>Actual</u>		<u>Average</u>
A 10% )	}	50% averages B
B 30% )		
C 10% )		
D 10% )	}	30% averages E
E 15% )		
F 5% )		
G 20%		20% averages G

Therefore rating is BEG

Single Numeral Rating The next step was to convert these three-position use-capability classes (with a possible 343 combinations) into one of seven use-potential ratings. This was done through the use of a table.<sup>1</sup> In this table the 343 possible combinations were assigned one of the seven potential ratings according to a system of weighting in which very poor areas tend to pull down the ratings of the very good ones associated with them. Thus, for example, the three-position rating BEG would be given a single rating, namely, fourth rate through the use of this table.

1

This table and further details of the methods used in rating the potential of land and water resources may be found in "The Ecological Basis for Land-Use Planning" by G.A. Hills. Research Report No. 46. Ontario Department of Lands and Forests, 1961.

### Objective Reviewed

It has been stated above that the primary objective of this paper is to provide those interested in multiple land-use planning in the Tweed Forest District with a concise statement of the comparative potential of the land and water resources. The scientific framework which is essential for the compilation of these comparative ratings of land-use capability has been outlined in the preceding paragraphs. In addition to presenting this inventory of the resources of the district, it is hoped that a broad understanding of the background for this resource inventory and its application will also be provided incidentally. For example, it is hoped, in some measure, to show the role which landscape units play as natural areas. Within the landscape units it is possible to marshall all pertinent data such as the results of a soil survey, forest inventories and other present use surveys, use-capability classifications, production statistics, sociological case histories, etc. All of these and other factors constitute a rational basis for the economic, social and political analyses required for land -use recommendations.

Space does not permit the demonstration of the method by which the patterns which constitute the landscape units are broken into the local areas which are classified, first in terms of their basic physical nature and then assigned a comparative rating for each of the five general land uses. However, this method is demonstrated on pages 153-180 of "The Ecological Basis for Land-Use Planning."

Neither does space permit detailed discussion of the considerations which are required in addition to use-capability ratings. Use-capability ratings merely provide a basis for the economic analysis and ethical decisions required to determine that type of land use (or combination of uses) and that intensity of management which is the most suitable for a specific area for a specific period of time. The importance of use-capability ratings in making such analysis and ethical decisions is outlined in Chapter IX.

BROAD PHYSIOGRAPHIC FEATURES OF THE  
TWEED FOREST DISTRICT

Regional Landform

The Tweed Forest District lies in two broad landform regions, namely, (i) the Lowlands of Great Lakes - St. Lawrence, and (ii) the Uplands of the Precambrian Shield. The Shield area lies between the main portion of Great Lakes - St. Lawrence lowlands on the south and part of the Ottawa Valley extension of these lowlands on the north.

The southwestern portion of the Tweed District is characteristic of the Great Lakes - St. Lawrence Region generally. It is underlain for the most part by Paleozoic limestone. The overlying materials are commonly (i) a high lime loam till, very stony or bouldery in some areas, (ii) lake-laid clay and silt which ranges from high to moderately low in lime. Over a large percentage of this region in the Tweed District, the mantle of overlying materials is shallow to very shallow.

Chapman and Putnam<sup>1</sup> have divided the portion of this region which is found in the Tweed Forest District into five subregions, namely, (i) Peterborough Drumlin Field, (ii) Dummer Moraines, (iii) Iroquois Clay Plain, (iv) Napanee Limestone Plain, (v) Prince Edward Limestone Peninsula. The excellent description of these regions by these authors provides a detailed background for an understanding of the landforms of the main agricultural portions of the district.

The southeastern portion of the Tweed District comprises the Frontenac Axis, a low-lying extension of the Precambrian Shield. In some respects this area is similar to the more northerly upland shield area. For example, a large proportion of the soil materials are extremely to moderately shallow over bedrock and outcrops are common. Both ice-laid and water-laid deposits are commonly of coarse texture and have a high proportion of granitic materials. On the other hand, the topography is generally smoother, the sandy materials are generally richer, and finer textured materials similar to those overlying Paleozoic bedrock are common. These materials are more scattered than in the region described above. Thus the landform features of this area are intermediate between those of the Paleozoic lowlands and the Precambrian uplands. However, considering most aspects of crop production, it is more convenient to group these southerly smoother areas with the other lowlands, even

<sup>1</sup>

L.J. Chapman and D.F. Putnam, "The Physiography of Southern Ontario." - University of Toronto Press.



though they are underlain by Precambrian bedrock. (See Chapman and Putnam's description of the Leeds Knobs and Flats).

The extreme northeastern corner of the district also lies in the Great Lakes - St. Lawrence lowlands, comprising a portion of the Ottawa River extension. Most of this area lies in a downfaulted bedrock plain. The portion of this plain lying in the Tweed district is underlain by Precambrian and Paleozoic bedrock and the soils are less calcareous than those in the southwestern portion (see Chapman and Putnam's Ottawa Valley Clay Plains).

Over half of the district lies in the more broken portion of the Precambrian Shield, although, here and there, smoother valley sand flats and broad till uplands are found. Rolling knobs of granite and gneiss are widely distributed throughout the area. Also of common occurrence are areas of limestone and non-limy basic rocks of Precambrian age. These more basic rocks (called low-base rocks in this report) have generally a somewhat gentler relief and more permeable substrata. Many of the farms in the Shield occur on the deeper soils over Precambrian limestone and low-base bedrock. Others are developed on the broad drumlins of stoney granitic till, located on the top of the large ridges of granite. Farms have been developed also on the smooth areas of coarse granitic sands, but most of these have been abandoned.

#### Regional Climate

Broadly speaking, the Tweed Forest District lies in a humid climatic region having moderately cool summers and moderately cold winters.

Sanderson<sup>1</sup> divided the humid areas of Canada into five types of effective moisture. The Tweed District would fall within three of these five types. The southern portion represents the driest of all the humid types. The Ottawa Valley to the north and east is in the second driest zone, but only a fringe of this area falls in the Tweed District. The uplands to the west centering around Bancroft are moister still and occupy the middle of the range between the 'dry' humid of Prince Edward County and the very wet perhumid climate of coastal regions of Eastern Canada.

From the standpoint of thermal efficiency, Sanderson divides the district in two. An area in the south which is largely coincident with the 'driest humid' region mentioned above, is the coldest of the moderate temperature (mesothermal)

1

M. Sanderson, "The Climates of Canada according to the New Thornthwaite Classification." Scientific Agriculture Vol. 23, No. 11, 1948.

regions of North America. The two northerly-lying humid areas are both in the warmest microthermal region of Canada.

A more detailed account of the climate may be found in a publication by Putnam and Chapman.<sup>1</sup>

### Regional Soil Profiles

A broad picture of the soils of the district is covered in three articles<sup>2</sup> in which Matthews and Baril have described the main soil types which occur in the Great Lakes - St. Lawrence Lowlands of Ontario, and Hills has described those of the Canadian Shield. Further detail regarding the nature and origin of the pertinent Great Soil Groups may be found in Stobbe's article<sup>2</sup> in the same publication.

### Site Regions

The nature of site regions and the role which they play as regions 'in which the local sites on similar landform conditions have similar potential' are discussed by Hills.<sup>3</sup>

The Tweed Forest District lies within the boundaries of two of Hills' site regions, namely (i) the Lakes Simcoe - Rideau Site Region, commonly known as Site Region 6E, and (ii) the Georgian Bay Site Region, commonly known as Site Region 5E.

The numbering of site regions (e.g. 6, 5 etc.) reflects broad regional differences in effective temperature, numbering from Hudson Bay southward. The letter E indicates the effective humidity of eastern Ontario which, in a continental scale, is the middle of the humid scale. Site Region 6E, lying in the southern part of the district when compared with Site Region 5E to the north, has a higher range of effective temperature, but with little difference in effective humidity (that is, relative to its temperature).

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1

D.F. Putnam and L.J. Chapman, "The Climate of Southern Ontario." Scientific Agriculture Vol. 18, No. 8, 1938.

2

"A Look at Canadian Soils." Agricultural Institute Review. Agricultural Institute of Canada. March-April, 1960.

3

G.A. Hills, "Regional Site Research." Forestry Chronicle Vol. 36, No. 4, 1960.

## CHAPTER III

### THE LANDSCAPE UNITS OF THE TWEED FOREST DISTRICT

The Tweed Forest District has been subdivided into landscape units to provide convenient units for planning resource management and other phases of land use. The nature of landscape units is briefly discussed on page 49.

Since physical features are used to separate one unit from another, they may be viewed as subdivisions of broader physiographic regions. On the other hand, they must be viewed as recognizable groupings of local stations or sites which are the actual places of crop production. In order that they provide a basis for planning at the farm community or other management - unit levels, landscape units should be at least 16 square miles in area, with a minimum width of one mile. Generally the units presented in this report are much larger.

Landscape units are defined in physiographic terms to provide a stable base upon which changes in vegetative cover, animal life and cultural features may be studied as changes are made in the use or management of land. Thus the total landscape unit should be considered a dynamic entity which may develop in several directions as dictated by the combinations of the potential of the land, the crop and man. Thus while landscape units are defined and described in physical terms of relief, climate, soil and water, they are actually areas of crop production, both natural and cultivated, and therefore are also patterns of biological and cultural features which are determined in part by the physiographic features used to define and describe them.

There are two main types of landscapes, namely,

- (i) Landtype landscapes which are dominantly areas of 'firm' land.
- (ii) Watertype landscapes which are dominantly bodies of water.

#### Landtype Landscapes

The landscape units of the Tweed District are shown on Map No. 1. The abbreviated key to the landtype landscapes indicates the main features upon which the units are separated and numbered, namely, (i) brokenness of topography over broad areas, (ii) broad classes of texture of parent soil materials, and (iii) patterns of depth classes over bedrock. Combinations of these features determine the first number assigned to a landscape unit such as the 23 or 23-1 (6E). Since each landscape unit is unique and there are usually more than one having characteristics which designate them as No. 23, etc., the units are numbered 23-1, 23-2, 23-3, etc.,



as they occur within the site region. It will be noted that the landtype landscape numbers fall between 1 and 100.

Other features of importance, not indicated by the unit number, but which are considered in establishing units are:

- (i) Mineral composition of bedrock and unconsolidated materials as these affect nutrients in soil and water.
- (ii) Soil moisture pattern.
- (iii) Soil profile development.
- (iv) Form and nature of water bodies.

Only the highlights of such differences can be presented in the following brief descriptions. Further detail must be gleaned from soil surveys and other reports for the district.

In order to describe the units as briefly as possible, a second grouping has been made which includes an additional factor to those used in classification presented on Map No. 1. This factor is the nature of the unconsolidated materials and of the underlying bedrock (where it influences productivity) with regard to their mineral content such as lime and other nutrient elements. This grouping is shown on Map No. 2. In some areas there is little difference in the two groupings since differences in the mineralogical nature of the materials happen to be associated with one or more of other three factors. In other areas important differences in the mineralogical nature necessitates a re-grouping of the units. It will be helpful to refer to both of these groupings to obtain the physiographic background for land-use planning.

In the following discussion of the groups presented on Map No. 2 the three factors considered in the first grouping are carried over by means of the first part of the unit number.

Group I - Landscapes developing on drumlinized loams and lakelaid clays and silts, generally moderate to high in lime with local areas of sand and gravel.

These, the deepest deposits in the district, are found in portions of Chapman and Putnam's Peterborough Drumlin Field and Iroquois Clay Plain regions, and of extensions of these into the Napanee (limestone) Plain.

With one exception, Unit 86-1 (6E), these landscapes are smooth plains with very few steep slopes.

Unit 45-1 (6E) is dominated by the stony limy loam till of drumlins scattered over an area of stony recessional moraine.

Unit 46-1 (6E) is an area of drumlinized till overriding kames of sand and gravel with large areas of outwash sand and local esker trains.

Unit 86-1 (6E) is similar to Unit 46-1 (6E), but with a greater proportion of steep slopes.

Unit 50-2 (6E) has a large proportion of moderate lime clay and a lesser proportion of drumlinized loamy till.

Units 50-1 (6E), 50-5 (6E), 50-6 (6E), 50-15 (6E) and 50-16 (6E) are portions of the Black River Landscape Plains in which deep clay and till deposits are generally distributed. Moderate lime clays are common in Units 50-1 (6E) and 50-6 (6E), whereas low lime and non-limy clays are common in Units 50-5 (6E) and 50-15 (6E).

Units 50-7 (6E) and 50-3 (5E) are deep low-lime clay areas underlain by Precambrian bedrock and Paleozoic limestone.

Unit 40-1 (6E) is dominantly a moderate to high lime clay, shallow to moderately deep over fragmented Trenton limestone bedrock.

Units 40-6 (6E), 40-7 (6E), 40-8 (6E) are areas of stonefree clay, generally low lime interspersed with limy till ridges and limestone flats.

Units 40-3 (6E) and 40-5 (6E) are areas of low-lime clay, deep and shallow over Precambrian bedrock along the eastern and northern fringes of the Napanee Limestone Plain.

Group II - Landscapes developing on deep and shallow loam and other materials (generally low in lime) over Precambrian bedrock.

These are smoother areas lying on the southern fringe of the Precambrian Shield in which low-lime loams and low-base sands are common. These are found either in the Leeds Knobs and Flats region of Chapman and Putnam or in similar areas.

Units 36-6 (5E), 36-2 (6E) and 36-7 (6E) are units which have a relative high proportion of loam overlying Precambrian bedrock.

Units 36-3 (6E) and 36-4 (6E) are areas of low-lime loam and low-base sands over Precambrian limestone and low-base bedrock.

Unit 38-1 (6E) has shallow materials over a variety of Precambrian bedrock with a high proportion of silt, loam and sand.

Group III - Landscapes developing on deep and shallow high lime loams over bedrock with some bare limestone bedrock.

These are areas on the Dummer Moraines. In general, the loams are exceedingly stony and very high in lime. Locally admixtures of non-limy sand and clay in varying amounts make a less limy and, in some cases, a less stony soil, hence generally a more productive soil.

Units 35-1 (6E) and 35-2 (6E) are the two landscape units in this group.

Group IV - Landscapes developing on shallowly covered limestone bedrock.

Predominantly the limestone bedrock is covered with less than a foot of somewhat limy loam. Included areas of limited extent and of irregular distribution are comprised of clays and somewhat stony loams similar to those described above.

Units 26-1 (6E) and 26-4 (6E) are portions of the Prince Edward Limestone Peninsula and underlain by the strongly fragmented Trenton limestone.

Units 26-2 (6E) and 26-17 (6E) are portions of the Napanee Limestone Plain and are underlain by the more massive Black River limestone.

Group V - Landscapes developing on weakly broken areas of Precambrian limestone and low-base bedrock, shallowly covered with low-base and granitic sand with local areas of low-base and low-lime sandy loam and loam.

Units 24-1 (6E) and 24-3 (6E) are predominantly sand with local occurrence of loam.

Unit 24-2 (6E) is similar to the above units but with scattered clay and silt pockets.

Units 26-3 (5E) and 34-7 (5E) and (6E) on the northern fringe of Precambrian bedrock have a fairly high proportion of granite. The presence of lime in relatively small proportions is due to the presence of Precambrian and Paleozoic limestone areas on the Ottawa Valley to the north.

Group VI - Landscapes developing on moderately broken uplands of granitic bedrock, commonly covered with shallow to moderately deep deposits of a stony silty sand till, largely of granitic origin. Included is a fairly high proportion of deep water-laid granitic sand.

Units 73-4 (5E), 73-10 (5E), 73-13 (5E) and 63-20 (5E) are units in which moderately deep areas of moulded loamy till similar to that of drumlins occur on many of the broad-topped granitic hills. In these specific units, lake and river patterns are not a dominant feature.

Units 73-11 (5E) and 63-18 (5E) are similar to the above, but in these units, watertypes are important features of the landscape.

Units 63-17 (5E), 63-19 (5E), 63-64 (5E), 63-73 (5E) are areas in which broad areas of till-capped granitic hills are not a dominant feature. Areas of moderately deep and rather shallow soils are more intimately associated with one another. This lowers the potential of local areas for agricultural development below those of the preceding two groups. Lake and river patterns are not a dominant feature.

Units 63-21 (5E) and (6E) are similar to the group immediately preceding, but these do have watertypes of considerable potential.

Group VII - Landscapes developing on weakly broken plains of Precambrian limestone or low-base bedrock, shallowly covered with materials derived from Precambrian limestone, low-base, and granitic bedrock.

Units 23-5 (5E) and (6E), 23-4 (6E) and 23-1 (6E) are areas in which watertypes do not represent a dominant proportion as a whole.

Units 23-2 (6E), 23-3 (5E) and (6E), 23-13 (5E), 33-2 (6E) and 33-6 (5E) are units in which watertypes occupy a significantly large proportion of the total potential of the area.

Group VIII - Landscapes developing on moderately broken uplands of Precambrian limestone or low-base bedrock, shallowly covered with materials derived from Precambrian limestone, low-base, and granitic bedrock.

Units 53-2 (5E), 53-3 (5E), 63-1 (6E), 63-15 (5E), 63-74 (5E), 63-75 (5E) and 73-2 (6E) are areas in which watertypes do not represent a dominant proportion of the potential of the unit as a whole.



Units 63-22 (5E) and (6E), 63-2 (6E), 63-3 (6E), 73-1 (6E) and 73-16 (5E) and (6E) are units in which watertypes occupy a significantly high proportion of the potential of the area.

Group IX - Landscapes developing on relatively smooth areas of deep sand derived from granitic and other Precambrian bedrock.

Unit 33-7 (5E) is an area of deep sand derived largely from granitic bedrock.

Unit 33-8 (5E) is similar to Unit 33-7 (5E), but with a much greater proportion of materials of limestone and low-base origin.

Group X - Landscapes developing on granitic and other Precambrian bedrock either bare or shallowly covered with granitic and low-base materials.

Units 13-1 (6E), 13-3 (6E) and 13-5 (6E) are smooth areas in which watertypes do not comprise an important proportion of the potential of the total unit.

Units 53-2 (6E), 53-6 (6E), 63-24 (6E), 53-4 (5E), 53-13 (5E) and 53-15 (5E) are moderately broken areas in which the watertypes do not constitute a significant proportion of the potential of the area.

Units 53-1 (6E), 53-3 (6E), 53-4 (6E), 53-5 (5E) and (6E), 53-7 (6E) are moderately broken areas in which the watertypes do constitute a significant proportion of the potential.

Group XI - Landscapes developing on moderately to strongly broken areas of predominantly bare (or extremely shallow) granitic bedrock.

Included areas of shallow sand and peat are frequent and valley trains of deeper sand, often imperfectly drained, are found occasionally.

Units 95-1 (6E), 95-2 (6E) and 95-3 (6E) and similar areas included in other units (particularly the group immediately preceding this group) have a moderate potential for blueberry production (a land use not discussed elsewhere in this report).

#### Watertype Landscapes

Watertype landscapes are also shown on Map No. 1. For the most part, only the major water bodies have been separated as distinct landscape units. For convenience in rating for recreational use, etc., several chains of lakes having a total area over 16 square miles have been included within a landscape unit necessitating the inclusion of areas of land usually of small extent but having characteristics which render them suitable components of the unit. Watertype landscapes may be distinguished from landtype landscapes in that their numbers are all above 100.

Group XII- Units 141-1 and 156-1.

Larger rivers and embraced lakes with no broad expanses of open water.

Group XIII - Units 224-1 and 262-1.

Chains of relatively small lakes and rivers with no broad expanses of open water.

Group XIV - Units 0-810-1, 0-810-2, 0-820-1.

Relatively small bays of Lake Ontario fully enclosed by land.

Group XV - Units 0-860-1, 0-860-2.

Moderately large size bays of Lake Ontario enclosed by land.

Group XVI - Unit 0-910-1.

Moderately large bays of Lake Ontario partially enclosed by land.

Group XVII - Units 0-1020-1, 0-1040-1, 0-1060-1.

Large bays and portions of Lake Ontario proper with broad expanses of open water.

## CHAPTER IV

### THE POTENTIAL OF THE TWEED LAND RESOURCES FOR AGRICULTURAL PRODUCTION

In Chapter I two scales for rating potential of the land for agricultural and other types of production were introduced. Use-capability classes A (the best) to G (the poorest) is the scale used in rating relatively homogeneous local stations such as fields and forest compartments, or portions thereof. Paralleling this scale is a seven-point rating of the agricultural use-potential of broad areas such as landscape units. This latter scale ranges from 1st rate (the best) down to 7th rate. Although the principles and class names are the same for all the land uses, the definitions of the classes in physiographic terms are generally quite different.

In all cases, the classes and ratings relate to the combination of crops generally grown in the area, but not to any specific crop. Both of these scales indicate comparative potential for producing the commonly grown crops of the region. Differences due to economic and other controlling factors other than the productive capacity of the land are not included in these ratings.

Map No. 3 shows the comparative potential of the landscape units for agricultural production. Since the seven-point ratings shown on the map must be interpreted in terms of patterns of the seven use-capability classes, a generalized definition of these classes follows.

#### Agricultural Use-Capability Class A

Level or gently sloping sites of deep permeable soil, well to moderately drained, with good capacity to hold water and provide nutrients.

Example: A good structured, moderately well-drained clay loam on a gentle slope.

#### Agricultural Use-Capability Class B

Sites with slight limitations to the profitable production of general crops.

Example: A well-drained, somewhat stony, loam till with a somewhat compact layer at 18" to 24."

#### Agricultural Use-Capability Class C

Sites which have moderate limitations to the profitable production of general crops.

Example: An imperfectly drained stony till.



GROUPING OF THE LANDSCAPE UNITS OF THE TWEED FOREST DISTRICT  
TO SHOW CAPABILITY FOR AGRICULTURAL PRODUCTION



#### Agricultural Use-Capability Class D

Sites which have severe limitations to the profitable production of general crops.

Example: Loams of the Dummer Moraines with a very high proportion of small limestone fragments. The common occurrence of excessive amounts of lime in the plough soil is an additional handicap to those of stoniness and steep slopes.

#### Agricultural Use-Capability Class E

Sites which have very severe limitations to the profitable production of general farm crops. Difficulties of operations reduce the feasibility of cultivation to widely spaced periods such as those used in the improvement of permanent pastures.

Example: Somewhat stony loam, shallow over bedrock.

#### Agricultural Use-Capability Class F

Sites which have soils capable of plant growth but are too stony, too steep etc., to be cultivated.

Example: Very stony granitic sandy loam till, shallow over granitic bedrock.

#### Agricultural Use-Capability Class G

Sites which have practically no potential for agricultural crops.

Example: Extremely shallow soils over granitic bedrock.

The distribution pattern of the above classes within the landscape units is presented in Table 3 (Appendix). Following the procedure outlined in the introduction to this report, the data presented in this table may be used to illustrate the way in which patterns of use-capability classes are converted into ratings of the use-potential of the landscape units as a whole. These ratings are shown on Map No. 3.

The following comments summarize the application of the potential-use ratings to the Tweed landscapes.

Second-Rate Potential Agricultural Land are those areas of lacustrine clay and glacial loams having a high percentage of Classes A and B lands but not high enough to be first-rate in view of the 25 per cent or so of Classes D, E and F. The areas of these lower capability classes are so distributed that they should not seriously interfere with the normal development of good agricultural communities.

Third-Rate Potential Agricultural Land are also areas located on drumlinized loams and lake-laid clays. Compared with the second-rate units, these units have a lower



percentage of Class C lands and a higher percentage of Classes D, E and F lands, thus averaging third rate. The areas of the lower use-capability do not prohibit agricultural development but do tend to pull the rating of the total down by offsetting the production potential of a small proportion of A and B lands.

Fourth-Rate Potential Agricultural Land are areas of deep, moderately good to good soils broken by areas of shallow soils over bedrock or by areas of steep slopes or marshes. This brokenness renders difficult a uniform development of agricultural land throughout the area. There is a potential for the development of approximately half the area into moderately good farm units but these will be largely in scattered clusters. The agricultural economy of fourth-rate landscape units will depend, in large part, on the gainful use of the remaining poorer lands for grazing, timber production or recreation. Thus the future of the agricultural development of these areas depends upon an integrated multiple use. The type of multiple use will vary from unit to unit whenever the potential for these other uses varies.

Fifth-Rate Potential Agricultural Land are those areas in which a large proportion of the land could be cultivated but with difficulty either because of steepness of slope, shallowness over bedrock, dryness and infertility of the soil. Generally, in these areas there are scattered pockets of better land which comprise 20 to 40 per cent of the total area. It is these pockets which could constitute the cores of attenuated agricultural communities if the land were really needed. The present retirement of better lands from intensive agriculture would seem to indicate that only the most progressive communities of landscape units of this potential will survive in a multiple-use economy including that of agriculture.

Sixth-Rate Potential Agricultural Land are those areas in which a large proportion of the land could not be cultivated except by very costly reclamation schemes.

A relatively large proportion of most of the landscape units has been settled. However, an extensive type of farming based on permanent pasture persists only on the small isolated patches of the better lands included in the landscape units (see Table in Appendix).

Seventh-Rate Potential Agricultural Land are those areas in which very steeply sloping and almost bare bedrock predominates. These are non-agricultural unless blueberries are considered an agricultural crop. Included in these landscape units are some of the highest producing blueberry patches in the district.



It must be kept in mind that the general ratings shown on the map are designed for planning resource management only. Before carrying out management on any specific farm unit, more detail on soil and site is needed.

## CHAPTER V

### THE POTENTIAL OF THE TWEED LAND RESOURCES FOR TIMBER PRODUCTION

In Chapter I two scales for rating the potential of the land for the production of timber and other crops were introduced. The subdivisions of these scales, namely, Use-Capability Class A (the best) to Class G (the poorest) and First-Rate Use-Potential to Seventh-Rate Use-Potential have the same names as those used for rating the physical capacity of land for agricultural use. The physical qualities which qualify areas to be placed in Timber Use-Capability Class A are somewhat different from those qualities which merit a rating of Agricultural Use-Capability Class A. There are, admittedly, some areas which are Class A for both farm and timber production. However, this rate does not generally apply; for example, stonier lands may be found in Timber Class A than in Agricultural Class A, also the nutrient requirement of trees is not as high as that of many farm crops. Accordingly, areas classified as Timber Class A may be as low as Class C or D in the agricultural scale.

Map No. 4 shows the comparative potential of the landscape units for timber production. Since the seven point potential-use ratings shown on this map must be interpreted in terms of patterns of the seven use-capability classes, the following paragraphs outline, in a very general way, the specifications of land areas placed in each Timber Use-Capability Class, and in first to seventh-rate timber lands.

#### Timber Use-Capability Class A

Sites in which there is an adequate moisture and nutrient supply within an aerated rooting zone, that is, high enough to meet the requirements of forest trees. This nutrient level may be only moderate in the scale for agricultural crops. The permeable rooting zone should be at least three feet deep.

Example from the St. Lawrence Lowlands: A deep permeable low-lime loam, moderately well drained.

#### Timber Use-Capability Class B

Sites in which there is a slight limitation (for tree growth) in either moisture, nutrient supply or rooting depth.

Example from the St. Lawrence Lowlands: A somewhat compact limy loam till (of a drumlin) covered with one to three feet of more permeable soil.

Example from the Precambrian Uplands: A deep permeable silty sand, non-limy but otherwise moderately supplied with bases and moderately well drained.





#### Timber Use-Capability Class C

Sites in which there is a moderately low limitation in either rooting depth or moisture and nutrient supply.

Example from the St. Lawrence Lowlands: A compact limy loam till covered with less than one foot of lime-free permeable soil.

Example from the Precambrian Shield: A deep coarse to medium sand relatively low in nutrients and moisture.

#### Timber Use-Capability Class D

Sites in which there is moderate limitation to growth either because of rooting depth, moisture supply or nutrient level.

Example from the St. Lawrence Lowlands: A shallow limy loam less than one foot over fragmented limestone bedrock.

Example from the Precambrian Uplands: A shallow somewhat dry non-limy silty sand over granitic bedrock.

#### Timber Use-Capability Class E

Sites in which there are moderately high limitations to growth due to either lack of moisture nutrients and rooting depth or to excess moisture in a poorly aerated soil.

Examples from the Precambrian Uplands: (1) A shallow coarse sand (averaging one foot) on the upper slopes of a granitic bedrock ridge. (2) Shallow peat over granitic sand.

#### Timber Use-Capability Class F

Sites with severe limitations to forest growth. Timber management is usually directed to the maintenance of protection forests in which revenue, derived from careful removal of selected trees, barely covers the cost of maintenance.

Example from the Precambrian Uplands: Shallow sand (usually less than a foot) with patches of bare granitic bedrock (average depth not more than six inches).

#### Timber Use-Capability Class G

Sites in which limitations to timber production are extremely great.

Example from the Precambrian Uplands: Areas of bare bedrock, very steep slopes or open swamps and marshes. In most instances, the cost of maintenance of protection forests on these areas must be met from sources other than the production of timber on these specific areas.

Map No. 4 shows the comparative rating of the potential of the Tweed Landscapes for timber production. The potential use ratings have been derived by the

same method as that used for the agricultural ratings and described in Chapter III in this report.

First-Rate Potential Timber Land is not found in the district in areas as large as the landscape units mapped.

Second-Rate Potential Timber Land are areas in which the dominant use-capability classes are commonly B, C and D in that order of occurrence. In some of the landscapes in this group most of the B and C lands have also a high agricultural potential. In the remainder of the areas these are not agricultural soils. Therefore, where available, these lands are the most attractive areas in the district for the development of the forest enterprises. However, such a development must take place under planned multiple-use economy.

Third-Rate Potential Timber Land are areas which average Use-Capability Class C and thus a fairly large proportion of the total area has a timber potential of Class D or better. In some areas in the Tweed District, a large proportion is not required for agriculture at the present time.

Fourth-Rate Potential Timber Land are areas which average Use-Capability Class D. These fourth-rate areas are not as low on the priority list as it might seem for two reasons. In the first place, areas having a higher timber potential occupy a relatively small total area. Secondly, a relatively large proportion of these better lands is required for agriculture. Therefore, while the timber producing possibilities of better timber lands should not be ignored, the fourth-rate forest lands should be considered of high priority in the development of a forest economy in the district.

Fifth-Rate Potential Timber Land includes two main groups. The first group includes segments which are dominantly Use-Capability Class E. The second group includes segments having a potential equal to that of the fourth-rate lands and other segments similar to the sixth-rate lands.

Sixth-Rate Potential Timber Land includes two main groups. The first group includes segments which are dominantly Use-Capability Class F. In this case, the area is relatively homogeneous and suitable only for protection forest with a low revenue from selectively cut timber. In the other group there are segments of non-productive protection forest land (seventh rate) and segments of productive forest land averaging third or fourth rate.

Seventh-Rate Potential Timber Land are areas in which Class G lands are dominant.

It must be kept in mind that the general ratings shown on the map are designed for planning resource management only. Before carrying out a management program on any specific forest compartment, more detail about the capability of the land under existing conditions is required.



## CHAPTER VI

### THE POTENTIAL OF THE TWEED LAND RESOURCES FOR THE DEVELOPMENT OF WILDLIFE HABITAT

In Chapter I two scales for rating the potential of land for agricultural, timber and other types of production were introduced. The same methods and principles will be applied to wildlife production when these have been fully worked out. In the meantime, the seven-point potential-use scale is used in a very general way to indicate comparative potential for the development of wildlife habitat.

The following factors have been considered in evaluating the potential of the land resources for supporting game birds, game and fur-bearing animals indigenous to the region.

- (1) Level of the capability of the land to produce vigorous growth of plants with a high nutritious value.
- (2) Capability of the land to produce a wide variety of plant species.
- (3) Occurrence of adequate distribution patterns of dry land, swamps and open water.
- (4) Ease of establishment of variations in cover types such as open areas, shrub borders and denser woodlands.
- (5) Occurrence of varied landform patterns.

The following is a brief outline of the characteristics of the various potential-use ratings shown on Map No. 5.

First-Rate Potential Wildlife Habitats are areas of highly productive land (in terms of plant nutrients and moisture supplying capacity) which have a wide variety of physical features such as level uplands (pre-dominating with a good interspersion of ridges, swamps, marshes and open water.

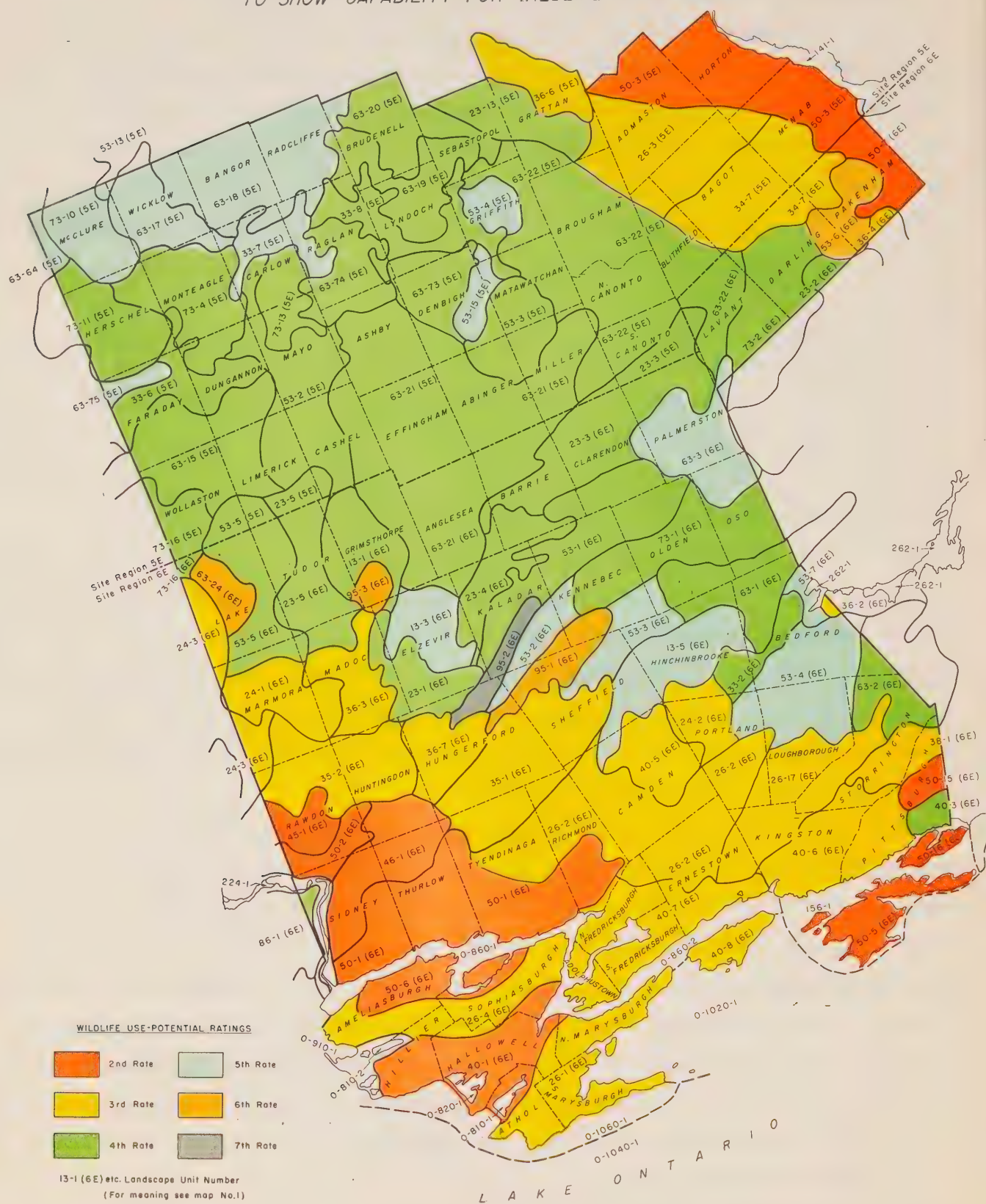
(There are no areas of this rating in the Tweed District).

Second-Rate Potential Wildlife Habitats are areas of relatively smooth plains of rich lacustrine clay or drumlinized loams with a moderately good interspersion of ridges, swamps, marshes, small streams and lakes.

Third-Rate Potential Wildlife Habitats include two groups of landscapes in the Tweed District. The first group is found on relatively smooth St. Lawrence Lowland areas of fairly good nutrient levels but only locally is there a good distribution pattern of wetland and open water. The second group occurs in the Precambrian Shield areas where the nutrient supply is moderate but where there is a good interspersion of ridges, swamps and open water.

Fourth-Rate Potential Wildlife Habitats are areas of moderate nutrient levels (moderately low on many of the ridges and deep sand flats). Most of the landscapes

MAP No.5 GROUPING OF THE LANDSCAPE UNITS OF THE TWEED FOREST DISTRICT  
TO SHOW CAPABILITY FOR WILDLIFE PRODUCTION



so rated have a good interspersion of ridges, marshes and open water but lack upland areas of rich soils.

Fifth-Rate Potential Wildlife Habitats are areas with a relatively low nutrient level (even in the depressions) from the standpoint of wildlife nutrition.

Sixth-Rate Potential Wildlife Habitats are areas of bare dry ridges with local patches of deeper soil, a few infertile swamps and very little open water.

Seventh-Rate Potential Wildlife Habitats, as classified in the Tweed District, are bare ridges of granite bedrock, with a very small proportion of the area having soil over two inches in depth.

It must be kept in mind that the general ratings shown on the map are designed for planning resource management only. Before carrying out a management program on any specific area, more detail about the capability of the land under existing conditions is required.



## CHAPTER VII

### THE POTENTIAL OF THE TWEED WATER RESOURCES FOR FISH PRODUCTION

The factors which determine the production of land crops are climate and soil. These are also factors which, in a modified form, determine the productivity of lakes and streams. In water bodies, as in land bodies, the level and availability of nutrients is an important soil property. Since 'aquatic soil science' has not advanced to the same stage as its 'terra firma' counterpart, indirect approximations of productivity must be made.

The two main factors considered in this report are:

- (1) The chemical nature of the bedrock and of the soil mantle within the drainage basin.
- (2) The physical form of the lake and stream complex.

Most of the nutrients in lakes and streams are derived from the leaching of the soil mantle. In some areas, however, a considerable proportion may be derived from bedrock which is fragmented and relatively rich in nutrients. Thus the chemical nature of both the consolidated and unconsolidated rock material must be considered.

Since the bodies of water within a landscape unit may be fed by streams from other landscape units, groups of landscape units are established with regard to the following factors:-

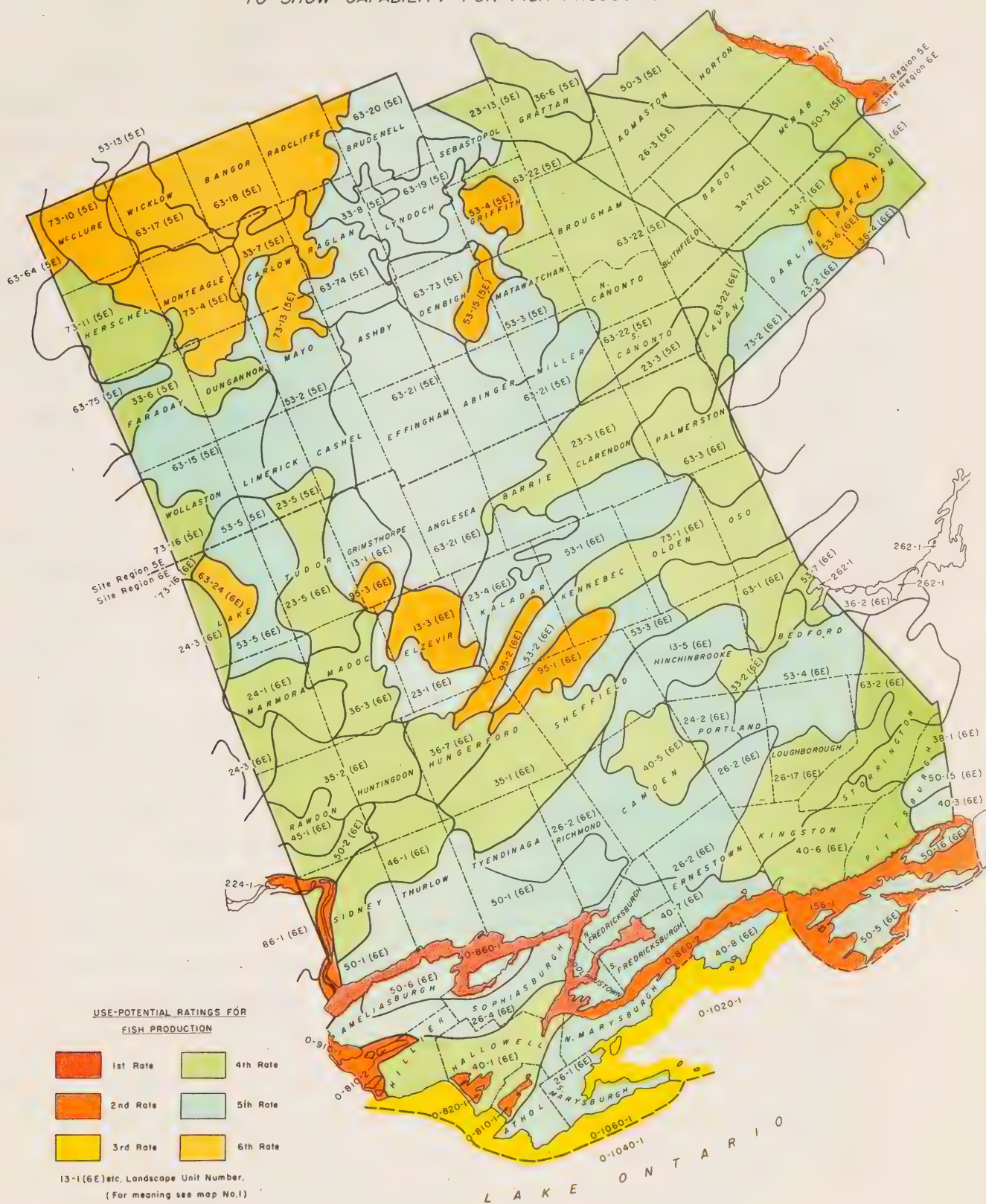
- (1) Petrography (mineralogical nature) of bedrock and soil materials.
- (2) Most convenient grouping of smaller water bodies or the most convenient subdivision of larger water bodies to provide a determinable range in the form and nutrient levels of the segments which comprise them.

The criteria for rating the various combinations of physical factors for fish production has not been established in a manner comparable to that established for agriculture and forestry. However, the following tentative background for a consideration of an integrated program of multiple land-use planning has been compiled following discussions with biologists who are familiar with the landscapes of the Tweed Forest District or similar ones in the same site regions.

On Map No. 6 it will be noted that the first three ratings apply only to watertype landscapes. This does not imply that there are no water bodies within the landtype landscapes which are equally productive. It is simply a means of generalization at some meaningful level for this report.

The fourth to sixth-rate areas include groups of landscapes within which

MAP No.6 GROUPING OF THE LANDSCAPE UNITS OF THE TWEED FOREST DISTRICT  
TO SHOW CAPABILITY FOR FISH PRODUCTION





there are water bodies having a range of potential that at present is recognized only in a general way. Eventually each segment of the individual water body will be rated and the proportionate distribution of each of the seven classes within the total water of each landscape unit will be established.

A brief outline of the six ratings used on Map No. 6 follows.

First-Rate Potential Fish Habitats are shown in red on the map. The single watertype landscape so rated is one in which most of its segments are Class A and the remainder Class B, when compared with other portions of water bodies in Site Region 6E (or in adjoining portions of the Great Lakes system). In addition to the area shown in red on the map there are small water bodies of Class A scattered throughout the landtype landscapes, particularly those rated as fourth rate.

Second-Rate Potential Fish Habitats are the areas shown in orange on the map. They are watertype landscapes in which most of the water segments rate Class B and the remaining Classes A and C. In addition to these watertype landscapes, Class B segments may be found scattered through the landtype landscapes, particularly those classified as fourth and fifth rate.

Third-Rate Potential Fish Habitats are shown in yellow on Map No. 6. The single area thus shown is a watertype landscape in which most of its water segments average Class C. In addition to these watertype landscapes, Class C water segments may be found commonly in the fourth-rate landscapes and occasionally on the fifth and sixth-rate landscapes.

Fourth-Rate Potential Fish Habitats are shown in green on the map. They are groupings of landscapes in which the dominant segments of the water bodies range from Class C to Class E (with relatively minor percentages in Classes A, B and F) depending largely on the physical characteristics of the water area rated.

Fifth-Rate Potential Fish Habitats are shown in blue on the map. They are groupings of landtype landscapes in which the dominant segments of the water bodies range from Class D to Class F (with relatively minor proportions of Classes B, C and G) depending largely on the physical characteristics of the water area rated.

Sixth-Rate Potential Fish Habitats are shown in brown on the map. They are groupings of landtype landscapes in which the dominant segments of the water bodies range from Class E to Class G (with minor proportions of Classes C and D) depending upon the physical characteristics of the water area rated.

The general ratings shown on Map No. 6 are designed for planning multiple-resource management only. Before carrying out a program of fisheries



management, more detail concerning the capability of the watertypes under existing conditions is required.

## CHAPTER VIII

### THE RECREATIONAL POTENTIAL OF TWEED LAND AND WATER RESOURCES

A first, and therefore a tentative, approximation has been developed to indicate the potential of the land and watertypes for recreational uses. The method used is a modification of the methods used for other land uses and is outlined in the same publication.<sup>1</sup>

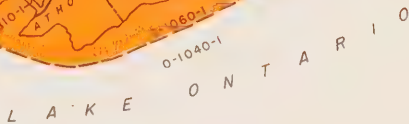
The various recreational activities rated cover aesthetic outdoor living, outdoor sports, trophy collecting, and studies of natural history and cultural geography. Many of these are combined operations. Aesthetic outdoor living may be merely inspirational outdoor existence without any conscious effort to view, study or collect any part of the landscape. It may include the passive viewing of the landscape in contrast to the more active and oftentimes strenuous landscape interpretation and recording of the naturalist, geographer and others. Outdoor sports include wading, bathing, swimming, boating, fishing, hunting, hill and mountain sports, hiking, cycling and motoring. Trophy collecting and perfection of skills are prime incentives to the participation of many of these sports.

#### Recreational Landscape Complexes

Since the activities of the recreationist are seldom as localized as that of the harvester of other 'crops,' it is necessary to group landscape units into recreational landscape complexes. This grouping is based on the recognition of areas having a high potential for intensive recreational use (forelands) combined with those areas most useful in providing the hinterland facilities which, for many recreationists, enhance the value of the foreland. Many of these hinterland areas possess potential forelands of lower potential. In order to cover all the activities included under resource-based recreation, it is necessary to rate all land and water areas.

It should be kept in mind that the ratings are established with the view of the ability of the land to provide for the largest number of recreationists engaged in the greatest variety of activities. Recreationists who find mere space and solitude a prime requisite will doubtless consider areas the best which will be classified low in the present scheme. However, these would lower considerably in their estimation once they are used even to a moderate degree. The ratings are shown on Map No. 7.

<sup>1</sup>  
G.A. Hills, "The Ecological Basis for Land-Use Planning." Research Report No. 46, Ontario Department of Lands and Forests, 1961.





## Preliminary Descriptions of the Seven Ratings of Landscape Complexes

There is no first-rate potential recreational land in the Tweed District if entire landscape complexes are considered. However, within the area shown on the map as second rate there are areas of Class A forelands. There are also areas of Class A hinterland. In no landscape unit are there sufficient areas of both foreland and hinterland to merit first rate. Hence the blank for first rate on the map.

Second-Rate Potential Recreational Land in the Tweed District is a complex of landscapes in which the major water forelands are located on bays and inlets of Lake Ontario. Since these forelands have largely clayey, rocky or marshy shorelines, many are classified as Class B, C or D. There are also several local but important areas of Class A. The average is Class B. The hinterlands are not as attractive as those of third-rate potential but the two types of hinterland in close proximity present an interesting contrast for the recreationist.

Third-Rate Potential Recreational Land in the Tweed District is a complex of landscapes in which the water forelands are on relatively large bodies of inland waters in which there is a moderate proportion of sandy and other types of favourable shorelines. The average of these is Class C. The hinterlands are also attractive for hunting, fishing and other outdoor activities.

Fourth-Rate Potential Recreational Land in the Tweed District is a complex of landscapes in which the water forelands are on relatively small lakes and average Class D. The hinterlands have at least a moderate potential for hunting and fishing.

Fifth-Rate Potential Recreational Land are areas where small streams and lakes are moderately well distributed and there is a moderate potential for hunting and fishing. In many agricultural areas the present use and ownership prevent the full utilization of the recreational potential.

Sixth-Rate Potential Recreational Land - The recreational potential of these landscapes lies mainly in the capabilities of these hinterland areas for hunting and fishing.

It must be kept in mind that the general ratings shown on the map are designed for planning the development of resources at a broad level. Before carrying out a developmental program on any specific area, detailed description and evaluation of local areas are required.

## CHAPTER IX

### RETROSPECT AND PROSPECT

The many thousand acres of abandoned farm land and of poorly managed forests provide ample evidence that considerable adjustment in land use is required in the Tweed District. It has been stated frequently that if there had been a classification of land before the land was settled, this adjustment would not be required. We are now entering into a period in which considerable effort is being put forth to make the necessary adjustments. Will these adjustments be successful? Are classifications of soil forest site, present use, land-use capability etc., all that is needed to make these adjustments?

In the first place, each of these classifications have their limitations in that they are designed to meet specific objectives. The natural land features presented by the soil survey must be interpreted within a framework of climatic and other physical controls in terms of technological, economic and social advantages. Many of the criteria used to establish limits of the soil phase are established to subdivide the soil type into convenient units for the rating of agricultural use capability. Since many of these are not satisfactory limits for the rating of timber and wildlife land-use capability, other limits must be established. This has been done in the forest site classification.

Furthermore, the costs and sociological advantages of developing the full potential of land for specific crops and by specific practices must be established before the use-capability classification can be applied. In embarking upon a broad-scale program of land adjustment, many of the economic and sociological implications of the introduced land uses will have to be assessed through value judgment. For this, past experience and present use will provide a guide. But the knowledge gained from past experience and present use is not enough to predict the success of new types of land uses. A knowledge of the land potential is required. But how can this potential be determined if the practice has not been actually carried out on the specific area?

The circle is not as vicious as it might seem. The main obstacle is a tendency to follow implicitly the practices and the standards of the past. The traditional land uses of agricultural and timber production must be modified to make way for wildlife production and other forms of recreation. Fortunately, the natural land features organized within the framework of landscape units can provide relative scales within which the changing values of land for new and different uses can be



evaluated. Local areas of land identified by physiographic features (soil and site phases) are the basic units. Since the use of a local area of land is dependent upon the characteristics of the other local areas with which it is associated, the suitability of the local area must be viewed in the light of the capability of the combined area.

Furthermore, in order to decide whether any specific use of any local area of any known capability level will be a satisfactory enterprise, it is not sufficient to know the comparative position which this local area and that of the surrounding mosaic occupies on a relative scale of productivity for the region. It is also necessary to predict whether or not the broad area possessing a specific level of potential has the economic, sociological and technological conditions which will place it in a favourable competitive position with other areas in this and other countries.

Accordingly, something more than the potential of local areas of land is required. Even more is required than the categorical statement that capability Class A or Class E is the limit of economic practicability. Take the case of agricultural land-use adjustment as an example. What is needed is an inventory of the future need of land for farm and pasture production within the foreseeable future in the following terms:

- (1) The required acreage and location of land of each use-capability category. (This can only be derived from an inventory of the land classes occurring in areas of acceptable size and location).
- (2) The degree to which land of lower capability must be associated with that of higher capability in the constitution of satisfactory farms and of permanent farm communities.
- (3) In order that the lower categories may qualify, a statement of their economic value and state of development is required.

Such a provincial inventory would indicate, in the final analysis, the lowest level of agricultural use capability which is feasible within each landscape unit or other broadly designated area. It would also indicate which portions of settlement lands with marginal potential-use patterns should be organized under a farming-grazing economy and which portions would be placed under forest management.

An example of the urgent need for such decisions is that of planning for the use of cleared and abandoned settlement lands in landscapes having fourth and fifth-rate agricultural potential. Decisions regarding the future of each marginal community should be made. The piecemeal removal of land from private ownership for the purposes of reforestation jeopardizes the livelihood and amenities of those who endeavour to farm the remaining lands. Thus the favourable balance between farm and



forest should be established, not only capability class-wise but also area-wise.  
For this purpose the landscape units presented in this report have been established.

Table 3

AGRICULTURAL USE-CAPABILITY RATINGS OF LANDSCAPE UNITS  
AS WHOLE UNITS AND AS PATTERNS OF LOCAL AREAS

Unit No.	Unit Name	Composite Rating	Distribution Pattern of Local Units Shown as Percentage of the Total Unit						
			A	B	C	D	E	F	G
Second Rate									
50-1 (6E)	Corbeyville	ACE	30	25	20	15	5	5	-
50-2 (6E)	Stirling	ACD	30	10	30	15	10	5	-
Third Rate									
50-5 (6E)	Wolfe Island	BCF	10	30	30	10	10	10	-
50-6 (6E)	Rednersville	BCF	5	30	30	10	5	20	-
50-7 (6E)	Pakenham	CBF	10	20	40	5	10	10	5
50-15 (6E)	Joyceville	CBF	10	20	35	10	10	10	5
50-3 (5E)	Douglas	BCF	10	20	30	5	10	10	5
Fourth Rate									
36-2 (6E)	Westport	ECD	5	10	15	25	30	10	5
36-3 (6E)	Madoc	ECD	5	10	20	20	30	10	5
36-7 (6E)	Tweed	ECD	5	10	20	20	30	10	5
40-1 (6E)	Bloomfield	DBE	5	20	10	40	10	10	5
40-5 (6E)	Enterprise	DFB	5	10	10	40	10	20	5
40-7 (6E)	Fredericksburg	DFB	10	10	10	40	10	10	10
40-8 (6E)	Amherst Island	DFC	5	5	10	50	10	10	10
45-1 (6E)	Harold	DEE	5	15	15	40	20	5	-
46-1 (6E)	Halloway	EBC	10	20	15	20	30	5	-
50-16 (6E)	Howe Island	BFD	10	20	10	10	10	30	10
86-1 (6E)	Murray Hills	EDB	5	20	10	20	30	10	5
73-4 (5E)	Monteagle Valley	EDB	-	10	10	30	30	10	5
Fifth Rate									
23-2 (6E)	McDonald's Corners	FDB	-	10	10	20	20	30	10
24-1 (6E)	Shanick	FDB	-	10	10	20	20	30	10
26-1 (6E)	Milford	FEB	5	10	5	10	30	30	10
26-2 (6E)	Camden	FEB	5	10	5	10	20	40	10
26-3 (5E)	Ashdad	FEC	-	10	15	10	25	30	10
26-4 (6E)	Crofton	FEC	-	10	10	10	30	30	10
26-17 (6E)	Sydenham	FED	5	5	5	15	15	40	15
33-2 (6E)	Godfrey	FDB	5	10	5	30	10	20	20
33-6 (5E)	Paudash	EFD	-	-	10	20	40	20	10
33-8 (5E)	Palmer Rapids	ECF	-	10	20	20	30	20	-
35-1 (6E)	Marlbank	ECF	5	5	20	10	40	15	5
35-2 (6E)	Crookston	ECF	5	5	15	15	40	15	5
36-4 (6E)	Halpenny	EFD	-	5	5	10	40	30	10
36-6 (5E)	Griersford	EBF	-	20	10	10	30	20	10
38-1 (6E)	Brewers Mills	FDB	5	15	10	20	10	20	20
40-3 (6E)	Gananoque	EFB	5	10	10	20	20	20	15
40-6 (6E)	Kingston	FCD	5	10	15	15	15	30	10
63-18 (5E)	Combermere	FED	-	5	10	10	35	30	10
63-20 (5E)	Brudenell	FDE	-	5	5	25	25	30	10
63-73 (5E)	Denbigh	FED	-	5	5	15	35	30	10
73-13 (5E)	Havergal	EFD	-	-	5	15	40	30	10
73-16 (5E, 6E)	Coe Hill	FED	-	5	5	10	30	30	20
Sixth Rate									
13-5 (6E)	Trafford	GFD	-	-	10	10	10	30	40
23-1 (6E)	Actinolite	FBG	5	20	5	10	10	30	20
23-3 (5E, 6E)	Fernleigh	DFG	-	-	5	5	20	40	30
23-4 (6E)	North Brook	FDG	-	-	10	20	10	40	20
23-5 (5E, 6E)	Mill Bridge	FEG	-	-	-	10	20	40	30
24-2 (6E)	Bellrock	GFD	-	5	5	10	10	30	40
24-3 (6E)	Vansickle	FGD	-	-	5	15	10	40	30
34-7 (5E, 6E)	Waba	FGC	-	5	10	10	5	40	30
53-5 (5E, 6E)	Glanmire	GFE	-	-	5	5	20	30	40

Table 3 (continued)

AGRICULTURAL USE-CAPABILITY RATINGS OF LANDSCAPE UNITS  
AS WHOLE UNITS AND AS PATTERNS OF LOCAL AREAS

Unit No.	Unit Name	Composite Rating	Distribution Pattern of Local Units Shown as Percentage of the Total Unit						
			A	B	C	D	E	F	G
Sixth Rate (con.)									
53-7 (6E)	Crosby	GFD	-	x	x	x	10	20	65
63-1 (6E)	Bolingbroke	GFD	-	-	5	10	10	30	45
63-2 (6E)	Chaffey's Locks	GFE	-	-	5	5	20	30	40
63-3 (6E)	Snow Road	GFE	-	-	-	5	10	35	50
63-21 (5E, 6E)	Effingham	GFD	-	-	5	15	10	30	40
63-22 (5E, 6E)	Black Donald	GFD	-	-	5	5	10	30	50
73-1 (6E)	Arden	FGD	-	-	5	10	15	40	30
73-2 (6E)	Poland	GFD	-	-	5	15	10	30	40
23-13 (5E)	Cormac	DFG	5	5	10	30	10	20	20
33-7 (5E)	Conroy	FGD	-	-	5	10	10	35	40
53-3 (5E)	Vennachar	FGE	-	-	5	5	20	40	30
63-15 (5E)	Turriff	GFE	-	-	5	5	20	30	40
63-17 (5E)	Maple Leaf	GFE	-	-	5	5	10	40	40
63-19 (5E)	Rosenthal	FGD	-	-	5	15	10	40	30
63-64 (5E)	Bruton	GFE	-	-	-	10	20	30	40
63-74 (5E)	Ireland	FGE	-	-	-	10	20	40	30
73-10 (5E)	Wallace	FGE	-	-	-	10	20	40	30
73-11 (5E)	Herschel	FEG	-	-	10	5	15	50	20
Seventh Rate									
13-1 (6E)	Grimsthorpe	FGF	-	x	-	x	5	60	30
13-3 (6E)	Elzevir	GGF	-	-	x	x	x	15	80
53-1 (6E)	Henderson	GGF	-	-	x	x	x	15	80
53-2 (6E)	Parkhouse	FGF	-	-	x	x	5	60	30
53-3 (6E)	McLean	GGF	-	-	x	x	x	20	75
53-4 (6E)	South Bedford	GGF	-	x	x	x	5	10	80
53-6 (6E)	Madden	GGF	-	x	x	x	5	10	80
63-24 (6E)	Copeway	GFG	-	-	-	5	5	20	70
95-1 (6E)	Mellon	GGF	-	x	x	x	5	10	80
95-2 (6E)	Sulphide	GGF	-	x	x	x	5	5	90
95-3 (6E)	Mount Moriah	GGG	-	x	x	x	5	10	80
53-2 (5E)	Cashel	GFG	-	-	-	-	10	20	70
53-4 (5E)	Khartum	GGF	-	x	x	x	5	10	80
53-13 (5E)	Lyell	GGF	-	x	x	x	5	15	75
53-15 (5E)	Rose Hill	GGF	-	x	x	x	5	10	80
63-75 (5E)	Faraday	GGF	-	x	x	x	5	20	70

x Units of this class present but occupy less than 5 per cent of total unit.



SECTION 5

AREA DIVISION

## SECTION 5

### AREA DIVISION

The Tweed District is divided into four administrative field divisions - Bancroft, Dacre, Tweed, Napanee - within which the officer-in-charge is responsible for all aspects of the work of the Department at the district level (excepting Bon Echo Park and Outlet Park which are separate administrative units). Basically, these are the units within which resource management plans are prepared and implemented. These Divisions are shown on Map # 8.

The Timber Branch plans within prescribed management units. In order that these plans can be prepared for an area which approximates the area covered by each administrative division, and coincident with the preparation of new timber management plans which is now underway, the original management units established some years ago have been revised. These new unit boundaries are shown on Map # 9. These boundaries follow township boundaries in all cases, thereby varying slightly from the administrative divisions.

For the purposes of planning, the landscape unit is the basic planning unit. Resource use potential and recommended use are based on these ecological units which are shown on Map # 1.

It should also be noted that there are three conservation authorities in the Tweed District - Moira, Napanee and Crowe - which have jurisdiction under the Conservation Authorities Act over certain aspects of resource management within their respective areas. The boundaries of these conservation authorities are shown on Map # 10.

Two counties - Renfrew and Lennox and Addington - have entered in agreement with the Minister for the management of County Forest lands. By virtue of this agreement, land use on these lands is within the jurisdiction of the Department of Lands and Forests. While choice of lands for purchase is initially a county responsibility, the Department can reasonably influence the location and kind of lands placed under agreement. The area affected by these agreements is outlined on Map # 11.

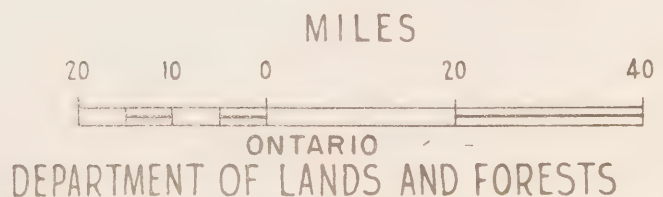


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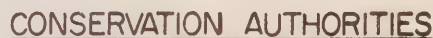


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## MAP 10



MOIRA RIVER

CROWE RIVER

## NAPANEE VALLEY

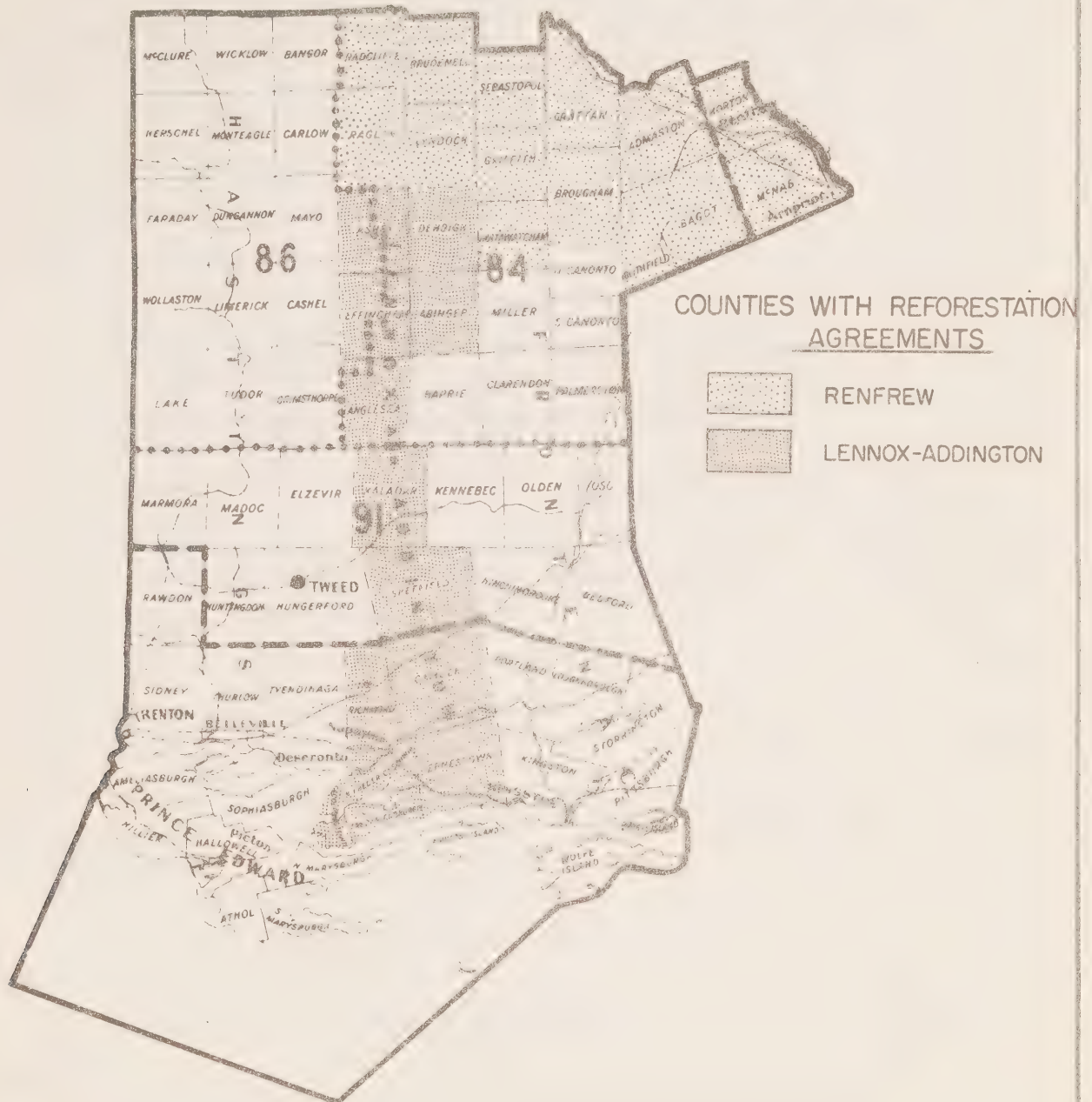
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# MAP II TWEED DISTRICT



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SECTION 6

EXISTING PLANS

## SECTION 6

### EXISTING PLANS

A number of formal plans have been prepared by the various operating branches in the district covering specific areas of the district. These are listed below under (A) and pertinent details are given for these plans under item (B).

#### A. LIST OF MANAGEMENT AND OPERATING PLANS

##### (1) TIMBER

- (a) Ashby Operating Block
- (b) Green Lake Operating Block
- (c) Burnt Bridge Operating Block
- (d) Black Donald Operating Block
- (e) Watt Lake Operating Block
- (f) Interim Management Plans - York, Moira, and Madawaska Management Units
- (g) Interim Operating Plans - York, Moira and Madawaska Management Units
- (h) Operating Plan for South Canonto Deer Habital Studies

##### (2) FISH AND WILDLIFE

- (a) Cringan Report on Prince Edward County Marshes
- (b) Dwyer's Marsh Report
- (c) Conroy Marsh Report
- (d) Lake Survey Reports
- (e) Deer Yard Management Plans
- (f) Fish and Wildlife Management Plan for the Tweed District

##### (3) FOREST PROTECTION

- (a) Fire Control Plan
- (b) Prescribed Burning for Blueberries

##### (4) PARKS

- (a) Southeastern Region Parks Planning Report

##### (5) LANDS

- (a) Land Management Plan for the Tweed Forest District

##### (6) GENERAL LAND USE

- (a) Resources Planning Areas Report
- (b) Survey of Marine Resources - Preliminary Report

B. DESCRIPTION OF MANAGEMENT AND OPERATING PLANS

(1) TIMBER

(a) ASHBY OPERATING BLOCK

Area:- 1,600 acres in Ashby Township, Lennox and Addington County as shown on Map # 9

Description of Plan:- The plan is for a 16 year period from 1956 - 71 and details the manner of orderly liquidation by clear-cut strips of a 1,600 acre block of tolerant hardwoods, hemlock and red spruce. It further prescribes post-cut silvicultural treatments to establish and tend the new crop.

Revision Date:- The plan will be reviewed and extended in 1966 for the period 1966 - 75. The increase in the operating period from 16 to 20 years results from an increase in the regeneration period, prior to cutting the adjacent strip, from 4 to 5 years. While this plan will be retained for record and assessment purposes, the basic elements of the plan will be incorporated into the new management plan for the Dacre Management Unit which will be prepared by the end of 1965.

Plan Location:- The plan and ledger is on file at the Dacre Chief Ranger Headquarters. Copies of the plan are on file at Tweed District Office (9-26-3), and the Silviculture Section.

Integration With Other Plans:- Excepting timber management plans, there are no other formal plans covering this area. Assessment of the effect of this type of cutting on the deer herd has been carried out by the Research Branch - Wildlife Section.

(b) GREEN LAKE OPERATING BLOCK

Area:- 22,030 acres in Lyndoch and Griffith Townships, Renfrew County as shown on Map # 9.

Description of Plan:- The current operating plan is for the period 1961 - 1971 and provides for an intensive management programme aimed primarily at the treatment,



Description of Plan:- (continued)

of young growth and immature white and red pine and white spruce stands to produce quality saw timber for local industry. Planting, ribes eradication and forest protection are an integral part of the programme.

Revision Date:- The management programme on this area will be incorporated into the new Dacre Management Unit Plan. However, because this is a key demonstration area, the plan for the Operating Block will be maintained and, subsequently, a revised plan will be prepared not later than 1971.

Plan Location:- The plan and ledger is on file at the Dacre Chief Ranger Headquarters. A copy of the written plan is on file at Tweed District Office (9-26-2).

Integration With Other Plans:- Deer yard improvements is an integral part of this plan and is carried out under prescriptions prepared by the wildlife biologist assisted by Fish and Wildlife and Timber staff.

(c) BURNT BRIDGE OPERATING BLOCK

Area:- 4,200 acres in Raglan Township, Renfrew County as shown on Map # 9.

Description of Plan:- The planned programme involves harvesting of stands of poplar with conversion to the white and red pine working groups, planting unregenerated forest land, and stand improvement and forest protection work in young growth and immature pine stands. The plan covers the period 1959 - 69.

Revision Date:- The programme under this plan will be incorporated into the plan for the Dacre Management Unit.

Plan Location:- Plan and ledger is on file at the Dacre Chief Ranger Headquarters. A copy of the written plan is on file at District Office (9-26-10).

Integration With Other Plans:- No other formal plans are in effect on this area. This plan does, however, include provisions for deer yard management developed co-operatively with the

Integration With Other Plans:- (continued)

Fish and Wildlife Branch.

(d) BLACK DONALD OPERATING BLOCK

Area:- 5,200 acres in Brougham Township, Renfrew County,  
as shown on Map # 9.

Description of Plan:- This plan is for a ten year period from  
1961 - 1971. The area is primarily in the red and white  
pine working groups with an important area of coniferous  
swamps which is an important element of the winter deer  
range. The programme planned for the project involves  
stand improvement work mainly in the red and white pine  
working groups, with some tolerant hardwood operations.  
Wherever possible, immature stands are to be marked for  
cutting by commercial operators. Winter deer yards will  
be improved under this plan. The overall objective is  
the production of quality saw timber and the maintenance  
of satisfactory wildlife populations on the area.

Revision of Plan:- This plan will be incorporated into the  
management plan for the Dacre Management Unit.

Plan Location:- The plan and ledger are on file at the Dacre  
Chief Ranger Headquarters. A copy of the written plan  
is on file at district office (9-26-11).

Integration With Other Plans:- Excepting the deer management plan  
which is a part of this plan, no other formal plans are in  
effect on this area. The operating plan for the block  
also includes provision for the management of recreational  
resources.

(e) WATT LAKE OPERATING BLOCK

Area:- 7,018 acres in Herschel and McClure Townships, Hastings  
County, as shown on Map # 9.

Description of Plan:- This plan prescribes management action on  
this predominantly tolerant hardwood project for the  
period from 1961 - 81. The objective as embodied in the  
plan is the orderly liquidation of a mature stand of  
tolerant hardwoods and regeneration of the area to

Description of Plan: - (continued)

acceptable hardwood and coniferous species. The plan also provides for the tending of the new stand, improvement of existing small areas of young growth and immature timber, access road development, forest protection, wildlife management and recreational use of the area.

Revision Date:- This plan will be revised in 1981. The operations outlined in the plan will be incorporated into the new management plan for the Bancroft Management Unit, but the plan for the block will be retained because of the demonstration value and experimental nature of much of the work proposed for the area.

Plan Location:- The plan and ledger are on file at the Bancroft Chief Ranger Headquarters. A copy of the written portion of the plan is on file at District Office (9-26-4).

Integration With Other Plans:- No other plans, excepting overall timber management and operating plans, apply to this area. The Deer Yard Management Plan prepared by the Fish and Wildlife Branch is a part of this plan. Provision for recreational use is considered in the plan.

(f) INTERIM MANAGEMENT PLANS - YORK, MOIRA, AND MADAWASKA  
MANAGEMENT UNITS

Area:- These plans cover all Crown land in the Bancroft and Dacre Chief Ranger Divisions.

Description of Plans:- These are preliminary plans developed from the initial Forest Resources Inventory data and cover the three Crown Units in the Tweed District. Basically, these plans set forth a calculation of the allowable cut together with certain data pertaining to the status of the growing stock.

Revision Date:- A revision of these plans was originally scheduled for 1957. Because of the basic changes in management planning procedures, this revision was not made pending rephotography and the compilation of new inventory data on which the new management



Revision Date:- (continued)

plans for the Bancroft and Dacre Management Units will be based.

Plan Location:- On file at District Office (9-21).

Integration With Other Plans:- None.

(g) INTERIM OPERATING PLANS - YORK, MADAWASKA AND MOIRA MANAGEMENT UNITS

Area:- All Crown lands in the Bancroft and Dacre Divisions

Description of Plans:- These plans have been prepared to bridge the gap between the 1957 planned revision date for the management plans referred to under (e), and the effective date of the new management plans. The plans outline planned annual cuts, forest improvement operations.

Revision Date:- The interim operating plans terminate at the effective date of the new management plans.

Plan Location:- On file at District Office (9-21).

Integration With Other Plans:- Close liaison is maintained with all other services to ensure that planned forest operations are not in serious conflict with other resource uses in the district. Where forest operations are considered to have a potentially detrimental effect on other resources, it is normal practice to discuss these operations with the services concerned and take such steps as are reasonable and necessary to minimize any conflict of interests.

(h) OPERATING PLAN FOR SOUTH CANONTO DEER HABITAT STUDIES

Area:- 318 acres comprising a group of spruce - cedar swamps in South Canonto Township, Frontenac County, as generally positioned on Map # 9.

Description of Plan:- This plan recommends management action for the period 1957 - 58 to 1962 - 63. This is a co-operative project involving the Research Branch, Fish and Wildlife Branch, and Timber Branch designed to improve the winter deer range in South Canonto Township. A delay in the schedule of operations has prolonged the duration of the project to 1963 - 1964.

Revision Date:- There are no current plans to revise or extend this particular plan.

Plan Location:- This plan is on file at District Office (9-26-9) and the Research Branch, Wildlife Section.

Integration With Other Plans:- This plan, as conceived and prepared, prescribes an integration of the interests and efforts of the wildlife and timber personnel concerned. This integration has been successful and beneficial.

(2) FISH AND WILDLIFE

(a) CRINGAN REPORT ON PRINCE EDWARD COUNTY MARSHES

Area: - Marshes on Lake Ontario shoreline of Prince Edward County.

Description of Plan:- This report, prepared by A. T. Cringan in 1958, deals principally with the productivity of the marshes of Prince Edward County with recommendations for their improvement. Investigations are continuing in this field and certain recommendations have been made for acquisition of lands in this county.

Revision Date:- None

Plan Location:- This report is on file at the Maple Office of the Fish and Wildlife Branch, the Regional Office in Lindsay, and Tweed District Office (3-19-2).

Integration With Other Plans:- No other formal plans cover these marshes except for marshes contained within the Outlet Provincial Park and the Sandbanks Provincial Park. Marsh management in these parks will be a co-operative scheme.

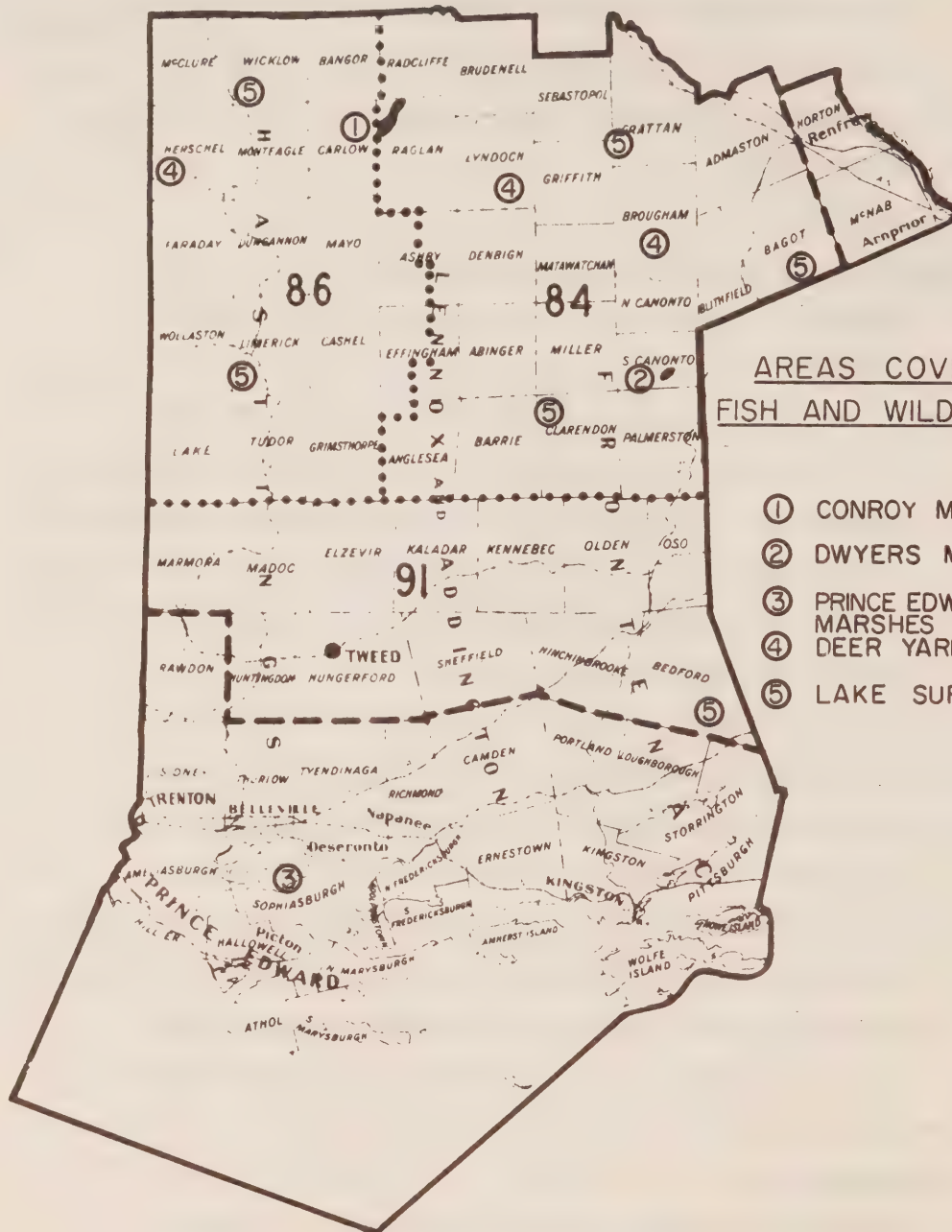
(b) DWYER'S MARSH REPORT

Area:- The 500 acre Dwyer's Marsh is located in South Canonto Township, Frontenac County as shown on Map # 12.

Description of Plan:- This report, prepared in 1958, recommends management action for the improvement of the Dwyer's Marsh for waterfowl and fur bearing animals (muskrats). Based on these recommendations the first phase of operations has

MAP 12

# TWEED DISTRICT



AREAS COVERED BY  
FISH AND WILDLIFE PLANS

- ① CONROY MARSH
- ② DWYERS MARSH
- ③ PRINCE EDWARD COUNTY MARSHES
- ④ DEER YARD PROJECTS
- ⑤ LAKE SURVEYS

MILES



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DEPARTMENT OF LANDS AND FORESTS



Description of Plan:- (continued)

been completed by constructing a small dam to stabilize and control the water level on the marsh.

Revision Date:- When investigations are completed and developmental plans finalized, a management plan will be prepared.

Location of Plan:- This report is on file at Toronto and Maple, Regional Office in Lindsay, and District Office (3-19-4).

Integration With Other Plans:- No other plans are affected by this report.

(c) CONROY MARSH REPORT

Area:- 5,000 acres in Radcliffe and Raglan Townships, Renfrew County, as shown on Map # 12.

Description of Plan:- This report was prepared in 1958 reviewing management work with respect to the marsh for the period 1952 - 58 and recommending action for the continuing development of the marsh for waterfowl and muskrats.

Revision of Plan:- It is anticipated that a management plan will be prepared for the Conroy Marsh.

Location of Plan:- This report is on file at the Fish and Wildlife Branch, Head Office, the Regional Office in Lindsay, and the District Office in Tweed (3-19-3).

Integration With Other Plans:- No other plans are involved.

(d) LAKE SURVEY REPORTS

The lake survey programme is a continuing annual programme aimed at procuring physical and biological data for fish management for all of the important fish producing waters in the district. On the basis of the survey reports, management action is prescribed, if necessary, for the individual water bodies.

These reports are filed at District Office (3-9-1-1).

(e) DEER YARD MANAGEMENT PLANS

In co-operation with the Timber Branch, and in conjunction with Timber operations (stand improvement projects primarily) plans have been prepared for a number of winter deer yards. In addition to the South

(e) DEER YARD MANAGEMENT PLANS - (continued)

Canonto Deer Habitat Management programme, plans have been outlined and operations initiated in conjunction with the Green Lake, Black Donald, Watt Lake and Burnt Bridge Operating Blocks.

Formal plans are on file in District Office in the Fish and Wildlife, and Timber Branches.

(f) FISH AND WILDLIFE MANAGEMENT PLAN FOR THE TWEED DISTRICT

Area:- This plan has reference to the whole of the Tweed District.

Description of Plan:- This 10-year plan was prepared in 1959 and is in two parts. Section I relates to Wildlife and presents short and long range plans for wildlife management. Section II presents plans for Fisheries management. Emphasis is placed on basic objectives, authorities under which programmes are prosecuted, population assessments, co-operative management agreements; and a review of management achievements for the past 10 years (1949-59).

Revision of Plan:- The plan will be revised in 1969.

Location of Plan:- The plan is filed in District Office at Tweed (file 3-5-5) in the Regional Office in Lindsay, and in the Fish and Wildlife Branch, Head Office.

Integration With Other Plans:- The Fisheries Plan does not cover waters included in any other plan. The Wildlife Plan is of a general nature and does not generally prescribe specific action on specific areas. The principle of maximum sustained wildlife production compatible with other resource uses is recognized in this and other resource plans and conflict is not considered to be a problem. Where specific areas are designated, e.g. Ashby and Green Lake Timber Operating Blocks, the Timber Branch plans make provision for wildlife production and assessment.

(3) FOREST PROTECTION

(a) DISTRICT FIRE CONTROL PLAN

This plan does not directly affect land use.

(b) PRESCRIBED BURNING FOR BLUEBERRIES

Area:- 1,500 acres in 10 sites in Kaladar and Sheffield Townships, Lennox and Addington County, and Sheffield Township, Frontenac County.

Description of Plan:- This plan contained in a letter from the district forester to the Forest Protection Branch dated March 9, 1961, details the areas to be burned over a 6 - year period for the production of blueberries on the so-called "Kaladar Hills."

Revision of Plan:- The plan will be reviewed at the end of the period (1966).

Location of Plan:- On file at Forest Protection Branch, Head Office, and District Office (6-6). -

Integration With Other Plans:- This plan conflicts with no other plans, and was fully discussed with all services prior to its implementation.

(4) PARKS

(a) SOUTHEASTERN REGION PARKS PLANNING REPORT

Area:- The plan has reference to the entire Southeastern Region, including the Tweed District.

Description of Plan:- The plan is for a 20 year period from 1962 and considers the capacity and development potential of existing parks, total park area requirements by successive 5 year periods, requirements for private land acquisition and Crown land reservation, and land requirements for related park uses e.g. hiking, trails, winter sports. Current Parks Branch plans cover the following parks areas in the Tweed District:



Description of Plan:- (continued)

LAKE ST. PETER PARK	-	2,000 acres
BON ECHO PARK	-	15,500 acres
BLACK LAKE PARK	-	76 acres
OUTLET PARK	-	265 acres
SANDBANKS PARK	-	1,200 acres
LAKE-ON-THE-MOUNTAIN-PARK	-	<u>256 acres</u>
TOTAL - - - - -		19,297 acres

The location of these parks is shown on Map # 13.

Revision of Plan:- This plan is revised annually as required.

Location of Plan:- Parks Branch in Head Office, and District Office (8-3-1) and (8-3-6).

Integration With Other Plans:- No other plans are in effect on these areas. Because of the character and current or projected intensity of recreational use, other resource uses are necessarily sub-ordinated in those areas noted above.

This plan is the product of the South Eastern Region Parks Planning Committee which is comprised of the Parks Supervisors of the four districts of the region as permanent members. The Regional Forester and the four District Foresters are ex officio members of this committee. The individual districts prepare forecasts of future park needs based on data provided by the Parks Branch, Head Office, and population data from available literature including the "Ontario Economic Survey - 1961." Through committee analysis of the sociological factors affecting recreational demand, and potential park sites, a composite plan was prepared for the region.

(5) LANDS

(a) LAND MANAGEMENT PLAN FOR THE TWEED FOREST DISTRICT

Area:- This plan applies to the entire Tweed District.

Description of Plan:- This plan sets forth the policy of the department with respect to sale, lease and licensing of land in the district. It includes reference to the following:-



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(a) LAND MANAGEMENT PLAN FOR THE TWEED FOREST DISTRICT - (continued)

Description of Plan:- (continued)

- (1) Land use permits for hunt camps;
- (2) Sale of land for summer resort purposes - by registered subdivision.
- (3) Sale of land for commercial use.
- (4) Sale of land for agricultural use.
- (5) Reservation of Crown lands (including islands)
- (6) Reservation of Crown lands for provincial parks, public access, wilderness areas, walking trails, etc.
- (7) Developmental plans for lakeshore lands.

Revision of Plan:- This is a preliminary plan which will be subject to continuing revision and expansion as conditions so warrant.

Location of Plan:- Filed in Tweed District Office (Lands Section); Regional Office, Lindsay; Lands and Surveys Branch, Head Office.

Integration With Other Plans:- Lands suitable for intensive recreational use are so recognized in all resource plans and management practices are modified to complement this use.

(6) GENERAL LAND USE

(a) RESOURCES PLANNING AREA REPORT

Area:- This report has reference to the entire South Eastern Region with sections covering the individual districts.

Description of Plan:- This report outlines the recommendations for Resources Planning Areas contained in the Lindsay, Tweed, Pembroke and Kemptville Districts. These areas are considered from the standpoint of present and future public recreation needs and the report considers the expansion of existing recreational facilities and the development of new areas. Recommendations are discussed under the following headings and requirements for acquisition of private land and/or reservation of Crown land are discussed under each category.



(a) RESOURCES PLANNING AREA REPORT - (continued)

Description of Plan:- (continued)

- (1) Existing Provincial Parks
- (2) Additional Provincial Parks
- (3) General Recreational Use Areas
- (4) Public Fishing and Hunting Areas
- (5) Public Areas for Fishing, Hunting and General Recreational Use Areas
- (6) Preservation of Typical Timber Types and Primitive Areas
- (7) Walking Trails

Revision of Plan:- No revision date set.

Location of Plan:- Filed at Tweed District Office  
(Parks 12-1-6); Regional Office at Lindsay  
(5-1-5-7) and Lands and Surveys Branch,  
Head Office.

Integration With Other Plans:- The resources planning areas established in this report for the Tweed District were reviewed, prior to submission, by all Branches and there is no conflict with existing resource plans.

(b) SURVEY OF MARINE RESOURCES - PRELIMINARY REPORT

Area:- Refers to the entire Tweed District

Description of Survey:- The survey covers a total of 46 marine resource areas which are considered to be key access points to important recreational waters in this district. The location, description, present use and an analysis of the developmental requirements of each area is covered in an assessment of each area.

Revision of Plan:- None scheduled at present.

Location of Plan:- Filed at Tweed District Office  
(Parks 8-2-65), the Lands and Surveys Branch,  
Head Office; and the Regional Office in Lindsay.

Integration With Other Plans:- There is no conflict with existing plans.

## SECTION 7

### REVIEW OF PLANS AND PREPARATION OF MULTIPLE LAND USE RECOMMENDATIONS

## SECTION 7

### REVIEW OF PLANS AND PREPARATION OF MULTIPLE LAND USE RECOMMENDATIONS

#### 1. BACKGROUND CONSIDERATIONS

(a) AGRICULTURE:- In Section 3 (B) of this report, the current and predicted situation in agriculture was discussed. As noted, the trend towards a decrease in occupied acreage will continue, particularly on the marginal and sub-marginal lands of the Canadian Shield. A decrease can also be expected on the better agricultural soils because of urban expansion. Resource management planning must consider the best utilization of the abandoned agricultural lands, and recommendations must include provision for the integration of all logical uses to the best advantage of each. For instance, the reforestation of abandoned fields is reasonable and, in most cases, economically feasible for the Crown. However, open land is an important habitat element for many wildlife species, particularly in the provision of effective "edge," and this factor must be given due weight and consideration.

It should also be emphasized that the better class agricultural lands will be subject to much increased management intensity, particularly in beef and dairy production, and in orchard and canning crop production in the climatically suitable zone in Prince Edward County and the Belleville - Trenton area.

In this report, it is assumed that there will be no change in government agricultural policy which will effect any significant change in the economics of agriculture on marginal and sub-marginal soils (generally soils with a use capability below Class 4 in Hills' classification).

(b) TIMBER:- This district is well suited to timber production by reason of favourable climate, productive forest sites, commercially desirable native tree species, adequate transportation facilities, and readily accessible markets. The pressure on the forests for saw-timber material will increase. It is further anticipated that improvements and expansion in the chemical utilization of pulpwood quality timber will facilitate management and increase the economic importance of the forest industry.

For the purposes of this plan, it is assumed that there will be a demand for all of the products of the forest by the end of the 20 year planning period. The demand outlook over the long run would appear to support the concept of maximum forest management effort in this district.

(c) RECREATION:- As noted in Table No. 4, approximately 30 per cent of the district remains in the Crown. In total, approximately 6 per cent of the area of the district is inland water, excluding small rivers and creeks which were not measured in the



(c) RECREATION:- (continued)

forest inventory process from which these data were derived.

This district is perhaps the major underdeveloped recreational area in southern Ontario, considering its inherent recreational potential and proximity to areas of high population density.

Recreation statistics are not generally readily available to illustrate increased recreational demands. However, Tweed District park use statistics show an increase in visitors from 88,000 in 1958 to 537,500 in 1963. While this, in part, represents only the increased facilities available to park users over the period, it is also a strong indication of the increased demand for outdoor recreation.

TABLE # 4

TOTAL AREA CLASSIFICATION OF THE TWEED FOREST DISTRICT INTO  
BROAD LAND AND OWNERSHIP GROUPS

Land Classification	Crown Land (acres)	Private Land (acres)	Total (acres)	Total Area %
Forested Land	1,094,877	1,571,752	2,666,629	58.6
Productive	983,938	1,320,622	2,304,560	50.6
Non-Productive	110,939	251,130	362,069	8.0
Non-Forested Land	29,237	1,594,016	1,623,253	35.7
Total Land Area	1,124,114	3,165,768	4,289,882	94.3
Water (inland)	261,412		261,412	5.7
TOTAL AREA	1,385,526	3,165,768	4,551,294	100.0
(sq. miles)	(2,165)	(4,946)	(7,111)	
Ownership Per cent	30%	70%	100%	

Crown summer resort sales appear to be a less conclusive measure of recreational demand. The price changes noted in Table No. 5 may have affected the demand for summer resort parcels, although this is not certain. The "patents issued" tend to be a more reliable measure than "sales," and in this category a gradual increase is evident. There are no data available on sales of private land for summer resort purposes, but it is likely that these sales equal and perhaps exceed Crown summer resort sales.

Hunting and fishing are included under recreation in this report. However, in this discussion of background considerations, they are discussed under "wildlife" and "fish" as a matter of convenience.

There is no doubt that demands on the recreational resources of this district will increase in the future at a much accelerated rate.

(d) WILDLIFE:- In this area wildlife is closely allied to recreation. The harvest of furbearers is economically important to a relatively small number of trappers, but hunting and the aesthetic pursuits associated with wildlife are of very significant recreational value. There is no accurate measure of the hunting population in the district, but a reasonably reliable estimate places the deer hunting population at around 25,000. Added to this are the waterfowl, small game, and upland bird hunters, who would number, in addition to those included in the deer hunter group, an additional 5,000 hunters. The total hunting population has been increasing annually over the past 20 years, and this trend can be expected to continue.

TABLE NO. 5

SUMMER RESORT SALES - TWEED DISTRICT

<u>YEAR</u>	<u>SALES</u>	<u>PATENTS ISSUED</u>
1952	367	277
1953	222	251
1954 (1)	41	60
1955	78	55
1956	67	71
1957 (2)	18	59
1958	123	96
1959	179	101
1960 (3)	116	98
1961	150	123
1962	121	120
1963	113	124

- (1) 1953-54 - Price increase from 30¢ to 60¢ per foot frontage
- (2) 1956-57 - Price increase from 60¢ to \$1.00 per foot frontage
- (3) 1959-60 - Price increase from \$1.00 to \$2.50 per foot frontage

Hunting on private lands has become a problem in the southern more settled areas of the district in recent years. Annually, an increased area is being posted against hunting. Unless current efforts to improve hunter - farmer relationships meet with more success than has been evident to date, the trend toward posting will continue. It can be expected that on the basis of increasing population density alone, considerable land adjacent to the present urban - suburban areas will be withdrawn from hunting.

Operational wildlife management is still very much in the developmental stage, and as funds become more readily available, and staff become better trained, a considerable increase in this field of activity can be expected. This plan

anticipates an intensification of wildlife management on Crown lands.

(e) FISH:- The fish resource of this district is also closely tied into recreation. Commercial fisheries operate in the Bay of Quinte and Lake Ontario waters, and are of economic importance to a limited number of persons. Bait fishing is expanding with the great increase in the numbers of sport fishermen. However, the recreational harvesting of this resource is the major use, and represents an important factor in the desirability of the area from a recreational standpoint.

The management of the sports fishery has received increasing emphasis and a considerable fish stocking programme has been developed over the past few years, based on lake survey data obtained from the investigation of the physical and biological properties of the important water bodies. These surveys have also adequately established the natural productivity of many lakes, particularly the warm water lakes, and have thus tended to reduce the demand for unnecessary fish stocking.

The fish management effort will undoubtedly intensify during the period of this plan.

## 2. RATING OF RECOMMENDED LAND USE

### (a) GENERAL CONSIDERATIONS

In the determination of recommended land use classifications, it is necessary to consider not only the basic potential productivity of the landscape unit for each of the major land uses, but also the social and economic factors which may influence the management of the unit. For instance, the continuation of agricultural use in a landscape unit with low agricultural potential is probably justified if the limited agricultural returns assist in supporting a human community in an area where a resident population is advantageous to the development of other land uses e.g. recreation. Also marginal land uses may be recommended for the period of the plan, which is 20 years, although the longer range objective may be to convert land in this present use to a more suitable use.

The intensity of use, while basically a function of the productive potential of the landscape unit, will be influenced by economic factors, and will also be tempered in this plan by the capacity to carry out management programmes during the period of the plan. Therefore, because of this, a use intensity may be recommended which is lower than would seemingly be indicated by the productive potential of the landscape unit.

In determining the level of importance of the recommended management classes i.e. major, subordinate, etc. and the degree of management intensity i.e.



very intensive, moderately intensive, and extensive, arbitrary definitions have been made. These are considered essential for uniformity of classification by those assisting in the preparation of the plan; and also for the guidance and understanding of those not directly involved in its preparation. It is not expected that there will be total acceptance of these definitions by all who may review the plan. However, they do establish the framework within which recommended uses were assigned in this plan using reasonably identifiable criteria.

(b) AGRICULTURE

Agriculture is recommended as a major (or co-major) land use where one-third or more of the land area of the landscape unit is in agricultural use capability classes A, B, C, and D. These classes include those lands judged to be suitable for crop cultivation and/or cultivated pasture. Lands of lower use capability which are an important adjunct to higher quality lands under agricultural management, and lands of lower use capability which support agricultural production which is recommended for continuance during the period of the plan, will be included as agricultural land in this definition.

If less than one-third of the landscape unit is in these classes, agriculture if present and recommended will be classed as subordinate (or co-subordinate).

Agricultural Use Intensity

Very Intensive: If one-third or more of the agricultural land in a landscape unit is recommended for specialized crop production, i.e. market gardening, canning crops, orchards; and if at least two-thirds of the total agricultural land is under cultivation, agriculture is classed as "very intensive."

Moderately Intensive: If one-third or more of the agricultural land is recommended as suitable for cultivation for dairy production, general farming, and/or beef production, agriculture is classified as "moderately intensive."

Extensive: If less than one-third of the agricultural land is recommended for cultivation, agriculture is classified as extensive. This category includes lands used primarily for rough grazing, pasture lands cultivated only periodically, and includes much of the so-called "mixed farming" on the Canadian Shield.

The Agriculture recommended use ratings are shown in Table No. 6, and the landscape units where Agriculture is recommended as a major use are illustrated on Map No. 14.

TABLE NO. 6

## SUMMARY OF LANDSCAPE UNIT AREA AND RECOMMENDED USE

LAND- SCAPE UNIT	NAME OF LANDSCAPE UNIT	LAND AREA (ac.)	WATER AREA (ac.)	TOTAL AREA (ac.)	% WATER	AGRI- CULTURE	RECOMMENDED USE RATING			PRO- TECTION FOREST	RECOM- MENDED USE DESIGNATION
							TIMBER	WILD- LIFE	FISH	RECRE- ATION	
13-1	Grimsthorpe	41,835	1,886	43,721	4.5		T3	W3	f1	r3	T3W3r3f1
13-3	Elzevir	36,927	171	37,098	0.5			W3	f2	r3	W3Ptr3fe
13-5(6E)	Trafford	59,505	2,636	62,141	4.4		T2	W3	f3	R3	T2R3W3Pt f3
23-1	Actinolite	41,278	66	41,344	0.2	A3	T2	W3	f3	R3	A3T2R3W3f3pt
23-2	McDonald's Corners	7,137	90	7,227	1.3		T3	W2	f3	R3	T3W2r3f3
23-3	Fernleigh	96,680	10,878	107,558	11.2		T2	W3	f1	R1	R1F1W2T2
23-4	Northbrook	43,694	279	43,973	0.6	a3	T2	W3	f2	r3	T2W3r3a3f2pt
23-5	Millbridge	63,071	615	63,686	1.0		T2	W2	f2	r3	T2T2F1W2
23-13	Cormac	36,934	7,645	44,579	20.7		T2	W3	f1	R2	R2T2F1W2
24-1	Shanick	46,272	229	46,501	0.5	A2	T2	W3	f3	r3	A2W3T2r3f3
24-2(6E)	Bellrock	26,556	1,750	28,306	6.5	a3	T3	W3	f3	r3	T3W3a3r3f3
24-3	Vansickle	28,649	3,092	31,741	10.7		T3	W3	f1	R2	R2F1T3W3
26-1	Malford	73,677	218	73,895	0.3	A3		W3	f1	R2	R2A3W3f1pt
26-2	Camden	188,864	50	188,914		A2		W3	f3	R3	A2R3W3Pt f3
26-3	Ashdad	100,068	2,486	102,554	2.5	a3	T2	W2	f3	r2	T2W2r2a2f3
26-4	Crofton	64,312	586	64,898	0.9	A3		W2	f3	R3	A3R3W2f3pt
26-17(6E)	Sydenham	79,185	1,795	80,980	2.2	A2	t3	W3	f1	R3	A2R3W3Pt f1t3
33-2(6E)	Godfrey	20,905	1,015	21,920	4.8	A3	T2	W3	f3	R3	A3T2W3R3f3pt
33-6	Paudash	40,154	2,201	42,355	5.5	a3	T3	W3	f1	R2	R2T3a3f1w3
33-7	Conroy	25,071	3,940	29,011	15.7		t1	W1	f3	R2	W1R2F3t1
33-8	Palmer Rapids	50,912	592	51,504	1.2	a2	T1	W2	f2	R2	T1R2W2a2f2
34-7	Waba	86,078	9,046	95,124	10.5	a2	T2	W3	f2	R2	R2F2W3T2a3
35-1	Marlbank	104,214	2,182	106,396	2.0	A3	T2	W3	f3	r2	A3T2W3r2f3
35-2	Crookston	74,446	2,432	76,878	3.3	A3	T2	W3	f1	r2	A3T2W3r2f1
36-2(6E)	Westport	1,295		1,295		A2	t2	W3		R2	A2R2W3t2
36-3	Madoc	39,135	137	39,272	0.4	A2	t1	W3	f3	r3	A2W3r3t1f3
36-4	Halpenny	3,891		3,891		A3	t1	W2	f3	r3	A3r3t1w2f3
36-6	Griersford	34,875		34,875		a2	T2	W3	f3	r3	W3T2r2a2f3
36-7	Tweed	36,817	1,242	38,059	3.4	A2	t1	W3	f1	R2	A2R2W3t1f1
38-1(6E)	Brewers Mills	20,912	3,998	24,910	19.1	A3	T3	W2	f1	R1	R1A2F1W1T3
40-1	Bloomfield	75,109		75,109		A1	T3	W3	f3	R1	A1R1W3T3f3
40-3(6E)	Cananoque	9,366		9,366		A3	T3	W3	f3	R1	R1A3W3f3pt
40-5(6E)	Enterprise	38,745	1,426	40,171	3.6	A2	T3	W2	f3	R3	A2W2T3R3f3
40-6(6E)	Kingston	68,130	5,502	73,632	8.0	A2		W3	f3	R2	R2A2W3F3pt
40-7	Fredericksburg	90,348	25	90,373	0.02	A2	t2	W2	f3	R1	A2R1W2t2f3
40-8	Amherst Island	16,478	100	16,578	0.6	A2		W3	f3	R2	R2A2W3f3pt
45-1	Harold	21,682		21,682		A2	t1	W3	f3	R3	A2R3t1w3f3
46-1	Halloway	66,447	170	66,617	0.3	A2	t1	W3	f3	R2	A2R3W3t1f3
50-1	Corbyville	115,342		115,342		A2	t1	W3	f3	R2	A2R2w3t1f3pt

TABLE NO. 6 (continued)

## SUMMARY OF LANDSCAPE UNIT AREA AND RECOMMENDED USE

LAND- SCAPE UNIT	NAME OF LANDSCAPE UNIT	LAND AREA (ac.)	WATER AREA (ac.)	TOTAL AREA (ac.)	% WATER	AGRI CULTURE	RECOMMENDED USE RATING				PRO- TECTION FOREST	RECOM- MENDED USE DESIGNATION
							TIMBER	WILD- LIFE	FISH	RECRE- ATION		
50-2	Stirling	19,838	25	19,863	0.1	A1	t1	w3	f3	R3		A1R3t1w3f3
50-3	Douglas	115,298	44	115,342	0.03	A2	t1	w2	f3	R2	pt	A2R2t1w2f3
50-5	Wolfe Island	33,763		33,763		A2		w3	f3	R2	pt	R2A2w3f3pt
50-6	Rednersville	35,229		35,229		A2		w2	f3	R2		A2R2w2f3pt
50-7	Pakenham	25,200		25,200		A2	t1	w2	f3	R2		A2R2t1w2f3
50-15(6E)	Joyceville	11,259		11,259		A2	T3	w2	f3	R3	pt	A2R3w2T3f3
50-16	Howe Island	8,642		8,642		A2		w3	f3	R2	pt	A2R2w3f3pt
53-1(6E)	Henderson	87,278	3,775	91,053	4.3			w3	f2	R2	Pt	R2W3ptf2
53-2	Parkhouse	22,466	227	22,693	1.0			w3	f2	R3	Pt	W3Ftr3f2
53-2	Cashel	88,600	6,171	94,771	7.0		T2	w3	f2	R2	Pt	T2R2w3f2
53-3(5E)	Vennachar	56,529	4,124	60,653	7.3	a3	T2	w2	f2	R2	Pt	T2W2r2a3f2
53-3(6E)	McLean	34,508	872	35,380	2.5		t3	w3	f1	R1	Pt	R1F1w3Pta3
53-4(6E)	S. Bedford	66,757	15,403	82,160	23.0	a3	T3	w3	f2	R3	Pt	W3T3r3f2
53-4(5E)	Khartum	17,982	415	18,397	2.3		T3	w3	f1	R2		T3W3r2f1
53-5	Glanmire	68,919	3,460	72,379	5.0		T3	w3	f3	R3	Pt	W3T3r3
53-6	Madden	32,729	175	32,904	0.5		T3	w3	f3	R2	Pt	R2W3ptf3
53-7	Crosby	8,431	188	8,619	2.2		T2	w3	f3	R2		T2R2W3f3
53-13	Lyell	1,869		1,869			T3	w3	f1	R3	Pt	W3F3f1r3
53-15	Rose Hill	16,316	363	16,679	2.2		T3	w3	f2	R1	Pt	R1F2W3T3Pt
63-1(6E)	Bolingbroke	37,037	18,113	55,150	48.9		T3	w2	F3	R1		R1W2T3F3a3
63-2(6E)	Chaffey's Locks	26,200	2,844	29,044	10.8	a3	T3	w2	F3	R3		R3F3W3F3
63-3(6E)	Snow Road	56,506	4,646	61,152	8.2		T3	w3	f2	R2		T3W3r2f2
63-15	Turriff	91,933	2,383	94,316	2.6		T3	w3	f2	R3		T2W3r3f2
63-17	Maple Leaf	41,115	482	41,597	1.2		T2	w2	F1	R1		R1T2F1W2a3
63-18	Combermere	97,903	17,742	115,645	18.1	a3	T2	w2	f2	R3		T2W2r3f2a3
63-19	Rosenthal	58,642	1,758	60,400	3.0	a3	T2	w2	f2	R3		T2W2r3f2a3
63-20	Brudenell	48,628	1,208	49,836	2.4	a3	T2	w2	F1	R1		R1T2F1W2
63-21	Effingham	283,847	27,608	311,455	9.7		T2	w2	f2	R2	Pt	T2W2R2f2
63-22	Black Donald	227,846	12,594	240,440	5.5		T2	w2	f3	R3		PtW3r3f3
63-24	Copeway	18,544	561	19,105	3.0		T2	w3	f1	R3		T2W3r3f1
63-64	Bruton	7,253	328	7,581	4.5	a3	T2	w2	f1	R2		T2W2r2a3
63-73	Denbigh	36,740	1,155	37,875	3.0	a3	T2	w2	F2	R3		T2W2r3a3
63-74	Ireland	43,803	1,332	45,135	3.0	a3	T2	w2	F2	R2	pt	R2R2T3W3
63-75	Faraday	8,783	718	9,501	8.1		T3	w3	F2	R2		R2T2F1W3pt
73-1(6E)	Arden	72,543	8,471	81,014	11.6	a3	T2	w2	f2	R3		T2W2r3a3f2
73-2	Poland	53,795	1,196	54,991	2.2	A2	T2	w3	f2	R3		A2T2W3r3f2
73-4	Monteagle Valley	72,640	952	73,592	1.3		T2	w3	f1	R2		R2T2W3f1
73-10	Wallace	28,631	2,057	30,688	5.3		T2	w3	f2	R1		T1R1F2W2
73-11	Herschel	43,320	6,221	49,541	11.4		T1	w2	F2			



TABLE NO. 6 (continued)

## SUMMARY OF LANDSCAPE UNIT AREA AND RECOMMENDED USE

LAND- SCAPE UNIT	NAME OF LANDSCAPE UNIT	LAND AREA (ac.)	WATER AREA (ac.)	TOTAL AREA (ac.)	% WATER	AGRI- CULTURE	RECOMMENDED USE RATING				PRO- TECTION FOREST	RECOM- MENDED USE DESIGNATION
							TIMBER	WILD- LIFE	FISH	RECRE- ATION		
73-13	Havergal	28,875	642	29,517	2.2	A2	T2	w3	f3	R2		R2T3w3a3f1
73-16	Coe Hill	24,590	1,187	25,777	4.8	a3	T3	w3	f1	R2		R2T3w3a3f1
86-1	Murray Hills	3,739		3,739		A2	t1	w3	f3	R3		A2R3W3t1f3
95-1(6E)	Mellon	27,733	588	28,321	2.1			w3	f3	r3	Pt	W3Ptr3f3
95-2	Sulphide	18,264	32	18,296	0.2			w3	f3	r3	Pt	W3Ptr3f3
95-3	Mount Moriah	10,383	28	10,411	0.3			w3	f3	r3	Pt	PtW3r3f3
224-1	Trent River	11,936	800	12,736	6.7	a2		w3	f1	R1		R1W3a2f1
TOTAL LANDSCAPE UNIT		4,323,844	219,348	4,543,192								

WATERSCAPE UNIT	NAME	WATER AREA		TOTAL AREA	FISH
		(ac.)	(ac.)		
141-1	Ottawa River	8,022		6,826	F3
156-1	St. Lawrence River*	61,030			F3
262-1	Rideau Lakes	1,276		1,276	F3
0-810-1	Spence Lake*	3,072			F3
0-810-2	Consecon Lake*	14,405			F3
0-820-1	Yeo Lake*	4,710			F3
0-860-1	Quinte Bay*	50,124			F3
0-860-2	Adolphus Reach*	27,238			F3
0-910-1	Weller Bay*	4,403			F3
0-1040-1	Lake Ontario*	412,342			F3

N.B. WATERSCAPES RATED  
FOR FISH ONLY

TOTAL AREA EXCLUDING LAKE ONTARIO WATERS 4,551,294 acres

\* Waterscapes not included in total area -- includes parts of Lake Ontario  
and waters included above in landscape unit areas.

## TOTAL AREA OF LANDSCAPE UNITS BY MAJOR (CO-MAJOR) RECOMMENDED USES

TIMBER	-	3,021,737	acres
AGRICULTURE	-	1,452,836	acres
WILDLIFE	-	4,101,516	acres
FISH	-	1,151,676	acres
RECREATION	-	2,908,340	acres

## LANDSCAPE UNITS OF THE TWEED FOREST DISTRICT





(c) TIMBER

Timber is classed as a major (or co-major) land use where one-third or more of the land area of the landscape unit is recommended for production forest. This excludes most (but not all) landscape units with a use potential of third rate or better inasmuch as agriculture usually is dominant in these units. It also excludes landscape units of seventh rate use potential and some units of sixth rate potential because of their sub-marginal production potential.

If less than one-third is recommended for production forest, timber if recommended is classed as subordinate (or co-subordinate).

Timber Use Intensity

Since adequate input-output data are not now readily available for the range of site conditions in the district, use intensity at the stand level has been simplified through the assumption that only two degrees of effort exist - intensive or extensive. It is considered that any positive management investment, to be protected, must be followed up by such additional stand treatments as may be necessary to ensure the growth of a high quality, high volume stand. Extensive management, on the other hand, involves the maintenance of acceptable operating practices under the Crown Timber Act and protection of the forest from fire.

Intensive management is confined to the more productive sites and is recommended only where management action is anticipated within the period of this plan. All other stands are recommended for extensive management.

Very Intensive:- If the total of the sites recommended for intensive management within the landscape unit comprises 50% or more of the area of production forest land, the landscape unit will be classed as being recommended for very intensive management. This level of management is possible only on landscape units with timber use potential of fourth rate or higher.

Moderately Intensive:- This level of intensity requires that not less than 10% and not more than 49% of the production forest land be under intensive management. This level of intensity would generally apply to landscape units of fourth rate use potential or higher but may also include fifth rate units at the lower end of the intensity range.

Extensive:- Landscape units are classified as extensive for timber if intensive management is recommended, for the period, on less than 10% of the production forest land. Generally speaking the extensive level of intensity would include normal forest protection (from fire) and maintenance of acceptable operating practices under



the Crown Timber Act. Timber marking without subsequent silvicultural treatments would fall into this category.

Lands recommended for timber use which are in private ownership present obvious problems in management as compared with Crown lands. However, in this report, and for the purposes of these recommended use ratings, private land is dealt with within the same terms of reference as Crown lands. The rating is assigned on the basis of the level of forest management effort which would be recommended to the owner by a competent forestry advisor. This has the advantage of presenting a relative value appraisal which will be useful in any land acquisition scheme, or in any effort to improve forest management on private lands.

The timber recommended use ratings are shown in Table No. 6, and the landscape units where Timber is recommended as a major use are illustrated on Map No. 15.

(d) PROTECTION FOREST

Protection forest for any of the purposes outlined in Hills' "Ecological Basis for Land Use Planning" is placed in a major (or co-major) position if one-third or more of the landscape unit is recommended as protection forest. If less than a third is so-recommended, it will assume a subordinate (or co-subordinate) position if present.

The landscape units with Protection Forest as a recommended use are shown in Table No. 6, and on Map No. 15.

(e) RECREATION

The land use potential ratings for recreation are an essential basis for the land use recommendations in this report. In addition, other factors such as population distribution within the district, external population density, specific recreation elements which upgrade the recommended use ratings, etc. are considered.

Recreation is rated as a major (or co-major) recommended use where one-third or more of the landscape unit contains, or is influenced by, one or both of the following elements of recreation:-

- (1) Well distributed water-bodies suitable for public, private, or commercial recreational development.
- (2) High quality hunting and/or fishing available for a minimum of three months out of the year. To be classed as high quality, the hunting and/or fishing must be an important attraction to recreational users from outside the rated area.

Recreation also, of necessity, must be considered a major land use where

## LANDSCAPE UNITS OF THE TWEED FOREST DISTRICT





the landscape unit contains, or is adjacent to, areas of relative high population density such as along the Lake Ontario shoreline.

#### Recreational Use Intensity

Very Intensive:- This intensity level requires a highly developed complex of private, public, and/or commercial recreational facilities in association with large and/or interconnected water bodies.

Moderately Intensive:- This degree of recommended use is defined as being low to moderate commercial, public and private recreational development generally associated with smaller lakes; and includes use of a significant proportion of the landscape unit for day and periodic use e.g. hunting (periodic would include 1 or 2 week deer season), and fishing.

Extensive:- This involves extensive day or periodic recreational use of the area with very few, if any, permanent recreational establishments.

It should be emphasized that these ratings are for a 20 year period. It is inevitable that within the next fifty years, recreation will be the dominant use on all landscape units with recreational potential, and all other uses, excepting agriculture, will be managed to complement this use. This does not imply that uses such as Timber will be any less important. It does, however, mean that timber operations will have to be modified in "critical edge" areas to protect the aesthetic values which are important to the recreation user.

The Recreation recommended use ratings are shown in Table No. 6, and the landscape units where Recreation is recommended as a major use are illustrated on Map No. 16.

#### (f) WILDLIFE

Wildlife will be recommended as a major (or co-major) land use where one-third or more of the area of the landscape unit is recommended for wildlife production. Generally speaking, agricultural crop production will be the main factor which tends to limit the suitability of any area for the production of a significant variety of wildlife species. Therefore, it is considered that any landscape unit having two-thirds or more of the land in agricultural use capability classes A, B, and C, or with two-thirds or more of the land under cultivated crops, will rate as subordinate for wildlife production.



## LANDSCAPE UNITS OF THE TWEED FOREST DISTRICT



## Wildlife Use Intensity

The land use potential is a guide to use intensity on the landscape unit, but the following are important directive factors in recommended use decisions:-

- (1) The use potential rating is a rating for general wildlife crops. On any given landscape unit, only one or a few important species may be involved in the management decision, and the decision is necessarily made on the basis of specific use potential.
- (2) Private landowners have, as yet, shown no general interest in wildlife management, mainly because they are not convinced that there is significant income to be derived from this source. In addition, an increasing acreage of private lands is being posted against hunting. At this time, therefore, it is not proposed that management other than "extensive" as defined here-under be recommended for private land except where there appears to be a reasonable chance that such private land will revert to public ownership within the period of the plan.

Very Intensive:- This recommended degree of intensity requires management to increase the carrying capacity on at least 50% of the range of the important game species.

Moderately Intensive:- This intensity requires management to increase the carrying capacity on at least 10% of the range of the important game species.

Extensive:- Management on less than 10% of the range, and including regulation and enforcement under the Game and Fish Act.

Since stand age and cover type distribution are important factors in game management, Timber operations which include in their prescriptions provision for habitat improvement are considered to be included in the above "intensity" definitions.

The Wildlife recommended use ratings are shown in Table No. 6, and the landscape units where Wildlife is a recommended major use are illustrated on Map No. 17.

## (g) FISH

The land use potential ratings of the landscapes and waterscapes are of basic importance in arriving at the recommended use ratings for Fish. However, because recommended use in this plan is a measure of management effort, and because most of the water bodies at the upper end of the productivity scale are in the "warm water class" with species which require relatively little management action, it will be seen, in Table No. 6, and on Map No. 18, that the management effort tends to be



## LANDSCAPE UNITS OF THE TWEED FOREST DISTRICT





## LANDSCAPE UNITS OF THE TWEED FOREST DISTRICT



concentrated in lakes with a significant population of one or more of the trout species, these being mainly the cold water lakes on the Shield.

Fish is recommended as a major (or co-major) use where at least 7.5 per cent of the total area of the landscape unit is suitable to support fish life. If the productive water area is less than 7.5 per cent, Fish, if present and recommended, is classed as a subordinate use. The rather precise reference point established in these ratings is based on actual measured areas together with the judgment of district staff as to the relative importance of landscape units.

#### Fish Use Intensity

Very Intensive:- If 50 per cent or more of the total productive water area of the landscape unit is recommended for positive management effort directed toward sustaining or improving population levels of desirable game fish species, Fish is classified as "very intensive."

Moderately Intensive:- If positive management action is recommended on 5 to 49 per cent of the total productive waters in the landscape unit, the recommended Fish use is classified as "moderately intensive."

Extensive:- If less than 5 per cent of the productive water area is recommended for positive management effort the landscape unit is classified as "extensive" for fish. This category would generally be limited to enforcement of the Game and Fish Act and other pertinent legislation, and public relations work with sportsmen.

It should also be noted that, with respect to both Wildlife and Fish positive management effort is considered to be virtually mandatory in areas of recommended very intensive and moderately intensive Recreation use. This has particular reference to those landscape units where recreation is water oriented, which includes most of the units, so recommended, which are on the Canadian Shield.

### 3. MULTIPLE USE RECOMMENDATIONS

Map No. 19 combines the recommended major use ratings for agriculture, timber, wildlife, fish and recreation into one Multiple Use Map. Map # 20 indicates the approximate distribution of Crown land in the district.

It is generally recognized that Crown lands afford the best opportunity for implementing land use recommendations. In addition to legislative control of the resources, the Crown has established policy guidelines which permit the application of the recommended management effort, subject, of course, to the availability of funds and in some cases, the refinement of acceptable management techniques.

There is no plan currently in effect (see Section 6) which is at variance



## LANDSCAPE UNITS OF THE TWEED FOREST DISTRICT







## LANDSCAPE UNITS OF THE TWEED FOREST DISTRICT







with the multiple use plan presented here. Current resource management efforts are in all cases being pursued in areas recommended for moderately intensive or very intensive use of the respective resources.

Multiple use planning for private lands presents the problem of implementation of recommendations. However, it is both desirable and necessary that government be cognizant of the resource potential of private lands and the role recommended for these lands in the economy of the district.

Whether or not present legislation and policy permits the implementation of all, or a major portion, of the private land use recommendations is probably not too pertinent, and should in no way prevent the formulation of these recommendations. Both legislation and policy are subject to change. However, any change is impossible if insufficient data are at hand to support the need for the change. It must be clearly established that any proposed action is in the interests of the province as a whole and does not unnecessarily interfere with the rights of the individual in his land. It is contended that long range plans such as the land use plan are an essential basis for the formulation of government legislation and policy. An action programme proposed for the shorter range period - 5 years in this plan -- must be within the context of current legislation and policy.

Based on the resource use analysis in this plan, the following long range recommended actions are proposed:-

- (a) There is an immediate need to consolidate present Crown land holdings, and a long range need to enlarge the Crown land area to permit full realization of the natural resource potential of those lands, now in private ownership which will not support economic agricultural enterprises without a major change in agricultural policy and economics. Such a change is not anticipated during the period of this plan. The total recommended Crown holdings (or land managed by the Crown such as through the agreement forest scheme) would approximate 2,800,000 acres compared with present Crown ownership of 1,385,526 acres. This land is almost entirely on the Canadian Shield.
- (b) Action is required to improve the climate for multiple use management on lands recommended for continuing private ownership. Timber management on private lands, despite past and present efforts to encourage improvement, shows no real evidence of approaching acceptable and economically necessary standards. Divided jurisdiction in wildlife

management, and the present apparent lack of opportunity for private initiative and gain in utilizing the recreational potential of the resource, has resulted in the virtual abandonment of attempts to manage this resource on these lands. With the projected increase in population density along the Lake Ontario shoreline, the demand for recreational opportunities on areas adjacent to the urban - suburban complexes will increase markedly during the period of this plan; and since this area will continue to be in private ownership, action will be necessary to stimulate private owners and municipalities toward satisfying this demand.

- (c) In conjunction with private and municipal action to provide recreational opportunities along the Lake Ontario shoreline, it is recommended that the government act to acquire substantial areas of land for recreation use. Prince Edward County would appear to be a most promising area in which to concentrate action. The recreation use capability is classified as 2nd rate. The area has not to date been caught up in the urban expansion experienced in the Trenton-Bellefonte-Kingston area, (the population of Prince Edward County over the period 1901-61 has gone from 17,864 to 19,656), and current land values throughout much of the County are attractively low -- probably less than an average of \$25 per acre for land suitable for this purpose. It is not difficult to visualize a recreational complex which would be unexcelled in Southern Ontario. This proposed development would not in any way prejudice agricultural use in the County.

It is also recommended that public hunting areas be acquired adjacent to the urban - suburban Lake Ontario "fringe." Parts of the Camden landscape unit should be investigated for this purpose.

- (d) In order to realize the natural resource potential of the district, government action will be required on a much accelerated scale. This is generally recognized as evidenced by the increased level of government expenditure over the past decade. A pressing need at the present time is for the construction of access roads into areas recommended for moderate and very intensive recreation and timber use on the Shield. This, however, must be preceded by the preparation of management plans for timber (now under preparation) and lakeshore lands.

- (e) There are now three Wilderness Areas in the Tweed District -- Kishkebus Lake in Barrie Township, Frontenac County, Matawatchan in Matawatchan Township, Renfrew County, and Timber Island, Prince Edward County. It is recommended that additional Wilderness Areas be established as required, but that such areas be limited to a maximum of 640 acres unless otherwise required by unusual circumstances. In areas where recreation is a co-major use, integrated resource management prescribes the preservation of important recreational values. Timber operations, which have the potential, if inadequately controlled, of seriously conflicting with these values, must be planned and executed to utilize the potential of the area to a degree which is compatible with other uses.
- (f) All future plans for the management of natural resources in the Tweed District must be guided by the recommendations of the land use plan except for such plans as may be approved subject to the necessary prior amendment of the land use plan. This plan is a "first attempt" and will require continuing revision as more precise information becomes available and conditions change. It must, therefore, be a guide, not a "straight jacket."



## SECTION 8

### RECOMMENDED LAND USE PROGRAMME

## SECTION 8

### RECOMMENDED LAND USE PROGRAMME

#### 1. General Considerations

This land use plan basically prescribes recommended use for the land of the district. It further attempts to designate use intensity on the basis of locally defined criteria. The recommendations made in this section of the plan do not attempt to detail specific required management procedures and action for each of the resources under consideration. This is within the province of the specific resource management plans -- the timber management plan(s), wildlife management plan(s), etc. It must be recognized, however, that the concept of land use planning as set forth in Circular L.13-1, clearly establishes the fact that the individual resource management plans are an integral part of this land use plan although practical space limitations dictate that they be in the form of separate plans with only the outline appearing in the land use plan (Section 6).

The recommendations for action under Item 2 hereunder are within the framework of current legislation and policy, and are for the five-year period from April 1st, 1964 to March 31st, 1969.

#### 2. Recommended Action

- (a) Prepare timber management plans for the Crown management units for a 20-year period with detailed prescriptions for a 10-year period.  
(This work will be initiated prior to April 1st, 1964).
- (b) Consolidate data general available in reports and proposal outlines for a long range (20-year) wildlife management plan, with short range (5-year) objectives and procedures set out in an operating plan. This latter plan should incorporate work now underway on the Conroy and Dwyers marshes, and deer habitat management in conjunction with Timber projects.
- (c) Consolidate information now available into a long range fisheries management plan (20-years) with a 5-year operating plan setting forth objectives and procedures. Fish management data is now somewhat more complete, as a result of continuing surveys and investigations, than is the case for wildlife.
- (d) It is recommended that a government field survey, involving field personnel of the Department of Lands and Forests and Travel and

Publicity Departments, be undertaken to appraise the recreation resource potential of the district and recommend action to meet the growing demand for recreation. This survey should also appraise the present recreation facilities and assess the degree to which they serve present needs. It is reasonable that a Recreation Plan for the Tweed District be prepared out of this survey. This plan would incorporate existing long range Parks plans.

- (e) Prepare recommendations in Form S. 22 for the acquisition of lands to consolidate the present Crown holdings in the district. These recommendations will not be made for lands now in agricultural use except, where the land goes out of this use during the 5-year period under consideration.
- (f) It is recommended that research be undertaken, by the Research Branch or through a co-operative research programme to assess site productivity on the main site conditions in the district. This would permit more precise Timber use recommendations.
- (g) Initiate a more active programme of wildlife habitat management particularly for deer, to increase the carrying capacity of the range. It is further recommended that additional studies be undertaken on the effect of hunting pressure on deer population.
- (h) Initiate as soon as possible a survey of inland Crown owned waterfront lands out of which should be prepared a lakefront lands management plan. Consideration should be given to the long term increase in demand for public use of inland waters and the desirability of classifying lakes as (1) not open for land sales (2) open for limited land sales (defined) and (3) open for maximum permissible land sales as prescribed under the Public Lands Act. The lakeshore lands should be classified into suitability classes for public and private use.





















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